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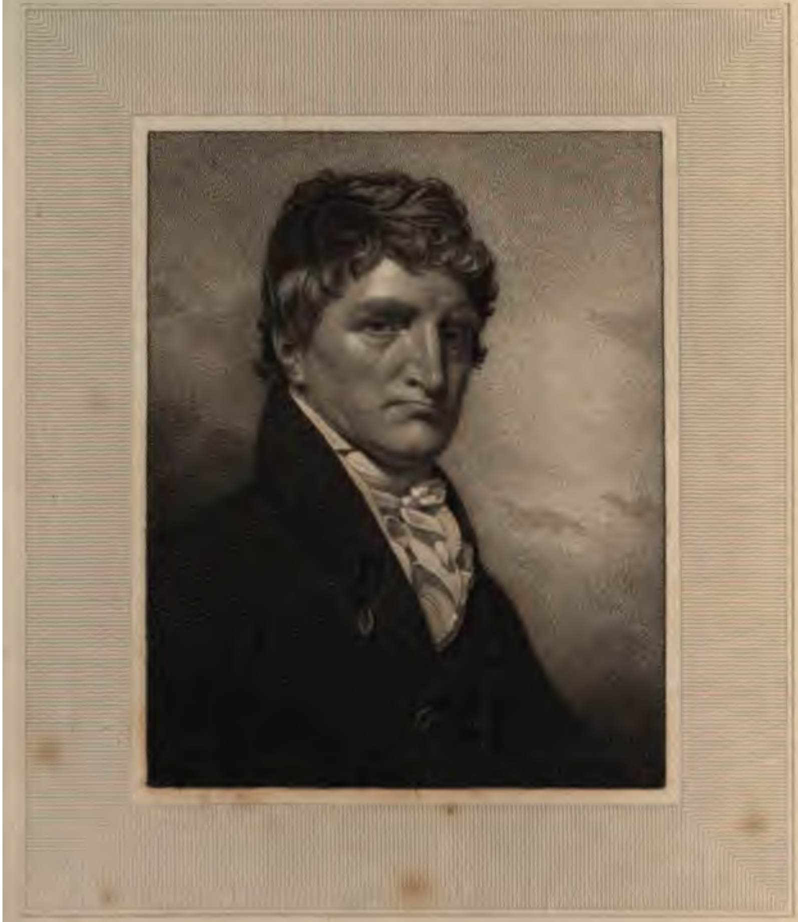

The Right Honourable
SIR JOHN SINCLAIR, BART.
Founder of the Board of Agriculture.

Engraved by Wm. Bond from a Miniature painted by A. Robertson Esqr.

THE

CODE

OF

HEALTH AND LONGEVITY;

OR,

A GENERAL VIEW

OF THE

RULES AND PRINCIPLES CALCULATED FOR THE PRESERVATION OF HEALTH,

AND THE ATTAINMENT OF LONG LIFE.

BY THE RIGHT HONOURABLE

SIR JOHN SINCLAIR, BART.

> Neque enim ulla alia re homines propius ad Deos accedunt, quam salutem hominibus dando.
>
> CICERO, PRO LIGARIO, C. 38.

THE FOURTH EDITION.

LONDON:
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1818.

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TO THE THIRD EDITION.

THE former editions of the Code of Health and Longevity comprehended four volumes. In the three last of these were contained, an historical account of the principal works,—a catalogue of foreign and domestic publications,—extracts from the most celebrated writers in modern times, —and a variety of communications to the author, regarding these important subjects*. However much a work on so extensive a scale, might be adapted to minute investigation, it was, on the whole, too voluminous for general use. This edition is therefore restricted to a single volume, in which all discussions of a theoretic nature, together with the historical account of the principal works on health, and the other contents of the three last volumes of the former editions, are left out.

In this edition, however, several chapters are added, on the important subjects of Clothing—Habitation—Change of Residence—Customs—Bathing—the means of Preventing, and Remedying Accidents or common Disorders—and on various articles of a miscellaneous nature; subjects which, in general, were either totally omitted, or but slightly touched upon in the former editions. The work, thus rendered as complete, as it is at present in the power of the author to make it, and restricted to the practical, and more essential parts of the inquiry, is, with great deference, submitted to the judgment of the public.

JOHN SINCLAIR.

Ham Common, near London,
1st December, 1815.

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* These three volumes were principally intended for the use of those who might be inclined to study the subject minutely; and to such persons they form a sort of medical library respecting the matters therein discussed.

ADVERTISEMENT

TO

THE FOURTH EDITION.

THE favourite object of my life, " The condensing useful knowledge into a moderate compass," is likely now to make considerable progress. "*A Code of Health and Longevity,*" and "*A Code of Agriculture,*" are completed ; and some progress has been made, in drawing up "*A Code of Statistical Philosophy,*" founded on the minute and extensive information contained in the Statistical Account of Scotland. In that intended Publication, the basis of Political Economy, and the principles of a patriotic and beneficent Government, will be explained.

For the purpose of rendering these Works more generally accessible, it is proposed, that each subject shall be treated of in one volume, to be sold at a Guinea, unless when any copies are printed, on paper of a larger size, and superior quality. Thus, each branch of science will be brought within so small a compass, that it will not require, either much expence to purchase, or much time to peruse.

To this Edition of The Code of Health and Longevity, reduced in price, so as to assimilate to the other Publications of the same description, there is annexed, Engravings of several Persons, distinguished for great age ; also, some information on the cure of the Rheumatism ; an object of such peculiar importance to the lower orders of society, who are so often disabled from labour, and reduced to indigence, by that grievous malady.

JOHN SINCLAIR.

Ormly Lodge, Ham Common, Surrey,
10th October, 1817.

INTRODUCTION.

SECT. I.

Preliminary Observations.

THE experience of ages sufficiently demonstrates, that the human frame is, from its nature, calculated merely for temporary existence. Indeed though man is a being of a higher order, he is at his birth more helpless than even the inferior animals, and is afterwards equally liable to decay. During the first years of his life, he is entirely dependent on the care and exertions of others, for food, for raiment, and for protection. Gradually he acquires a considerable proportion of bodily strength, and reaches a high degree of intellectual capacity: but, after possessing these faculties for some time, his strength at length decays, his sagacity diminishes, his body loses its vigour, the powers of his nature give way, and he ceases to live. This is the fate even of those who are the most fortunate, the most healthy, and the most robust.

But though all must die, yet the duration of life is uncertain; and while many perish during infancy, youth, or manhood, the existence of a few is prolonged to extreme old age.

Nay while men continue in existence, their situation as to health differs considerably. Some enjoy the possession of their mental and corporeal powers, almost unimpaired; while others are occasionally, and in some cases perpetually, in a sickly state, the victims of *disease*, which, by the early application of proper means, might, in numerous instances, have been prevented.

Many persons, also, by means of various remedies which experience has pointed out, have either had their complaints mitigated, or have recovered from those disorders with which they had been afflicted, and from the effects of any personal accidents by which they had unfortunately suffered, and have regained their former health and strength.

Hence arises the threefold division of the general subject of Life and Health; namely, into the means, 1. OF PROLONGING LIFE; 2. OF PRESERVING HEALTH; and, 3. OF CURING AND ALLEVIATING DISEASE.

The means by which persons are relieved from the various disorders and accidents to which they are liable, more especially those which are attended with any difficulty or danger, it is not the purport of the following pages to discuss. Of the other objects, however, the means of Prolonging Life, and Preserving a state of Health, not as distinct propositions, but as being, *when properly understood*, so intimately blended together, that they can hardly be separated, it is the intention of the Author to treat. What enquiry can be more important? If health be one of the greatest blessings of life, and if disease render man miserable, what can be more desirable than to ascertain the means of preserving the advantages of the one, and of counteracting the ravages of the other? If by prolonging our existence also, we can be of more service to mankind, from the superior knowledge which greater experience and longer observation generally furnish; what can be more important, than to endeavour to preserve our health and strength, that we may be the better enabled to perform beneficial and useful actions to our fellow-creatures? For, THE POWER OF DOING GOOD, IS THE CHIEF OBJECT FOR WHICH EXISTENCE IS DESIRABLE.

It is the more necessary that the attention of the public should be frequently directed to these most interesting subjects, because men, when living in an artificial or civilized state, are more apt to become unhealthy, and to perish at an earlier age, than in a more simple state of society. In periods of civilization and luxury, it frequently happens, that men have been bred up with too great indulgence; that their food is less wholesome; and that fermented liquors, or ardent spirits, are taken in destructive quantities. In great cities, the rich neglect to take regular exercise; are improperly clothed, out of caprice or fashion; and are in some measure obliged, by the force of prevailing custom, if they wish to live in society, to follow, in regard both to food and rest, the pernicious practice of late and irregular hours. On the other hand, the poor are crowded in mean houses, use unwholesome food, and are employed in various unhealthy occupations, the sources of numerous complaints. As the intercourse of nations also becomes more frequent, all ranks are subject to a number of infectious disorders; and from an ardent desire, at all hazards, of acquiring wealth, great numbers are induced to reside in unhealthy climates, amidst disease and contagion.

In civilized society, likewise, there is an additional source of debility and disease, from the influence which the mind has upon the body. The pursuits of ambition; the contests for power; the rage for commercial speculation; the pressure of public burdens; the vexation and anxiety resulting from inordinate expenses; the distress which frequently arises from the misconduct of near relatives and friends, more usual in luxurious and degenerate ages; to which may be added, the horrors attending those revolutions, by which, in more recent times, the world has been afflicted;—are all calamities by which the mind is deeply affected; the health of the individual suffers; and man becomes afflicted with many disorders from which he would otherwise have been exempted.

When all these circumstances are considered, it surely can require little apology from any person, who has directed his attention to such enquiries, for venturing to lay before the public his sentiments concerning them.

It may be proper, however, briefly to explain, how an individual, unconnected with the medical profession, has been led to pay such particular attention to the subjects of Health and Longevity, as to consider himself competent to the task, of submitting his opinions to others regarding such interesting particulars.

SECT. II.

Circumstances which led to the Undertaking.

THOUGH naturally possessed of a sound constitution, untainted by any hereditary disease, yet, about the year 1797, the Author having fallen into a weak and enervated state, found himself unequal to the task, of managing his private concerns, of prosecuting useful enquiries, or of applying his mind to political pursuits, with his former zeal and energy.

As age advanced, he found many of his contemporaries either falling into a declining state, or sinking into the grave, much sooner than he expected; and in carrying on a great national work*, it evidently appeared, how few of the human species, in proportion to the numbers born, attained any considerable age, even in the healthiest districts.

But, above all, it was a matter of regret to him to find, (and the longer he lived, he felt it more forcibly), that even while men do live, their existence is too often embittered by disease, and their life rendered a burden both to themselves and to others.

These circumstances united, naturally induced him to apply his mind to the subjects of Health and Longevity.

He began by endeavouring to procure the re-establishment of his own health, in which, by the assistance of some eminent physicians, he fortunately succeeded; by means of which he is now enabled to undergo perhaps as much mental and bodily labour, as any individual who has entered his sixty-second year, who was for some time in a weak and delicate state of health, and for above forty years past, has been engaged in laborious pursuits.

He next ventured to give hints to others, whether advanced in life, or in a sickly state, how they might secure the same advantages, which he had derived from his own experience, and the extensive inquiries he had made; and he has had the satisfaction of receiving, the most grateful acknowledgments from various persons, in all ranks of life, for the benefits they have derived, by adopting the rules which he recommended.

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* The Statistical Account of Scotland, which gives a description of every parish in that part of the United Kingdom.

Thus confirmed in the opinion he had formed of the advantages to be derived from such enquiries, and attention to the rules thereby obtained, he was at last induced to think of a greater and bolder attempt,—"*that of instructing his fellow creatures in general, how they could best preserve their health, and attain a comfortable old age.*"

SECT. III.

Materials whence the Work has been drawn up.

THE following work is in some degree founded on the observation and experience of the Author; and in its progress, he proposes to detail the practices, by attention to which his own health was restored. He was likewise at considerable pains in collecting rules for the preservation of health, from a number of intelligent individuals, both by conversation and correspondence, in particular much information was obtained, through the medium of a short Treatise on Health and Longevity, which was printed both in French and English, accompanied by several questions, in reply to which he fortunately procured a variety of important communications, *in manuscript*, both from foreign and domestic correspondents. The hints he thus obtained, he considers to be a most valuable part of this publication, as several of them are not to be met with in any work hitherto printed.

But, above all, he has to rely on the treasures of knowledge regarding Health and Longevity, published by various authors who have already written on these subjects, and of whose works he has made a collection, to the number of several hundred distinct treatises or volumes, every one of which, either directly or indirectly, is connected with the present enquiry. From the whole he has extracted, in the following pages, not only such rules as seemed to him of peculiar importance, but also the observations and facts on which they are founded*. He flatters himself that they will be of use to others, as they have been to himself. By the observance of these rules, he is persuaded, that men, instead of living recluse, or weighing their food, measuring their drink, and the like niceties, may, with moderation and prudence for their guides, mingle in the usual train of civilized or artificial society, without suffering in their health, or shortening the period of their existence.

SECT. IV.

Advantages derived from an Attention to Rules connected with the Subjects of Health and Longevity.

IF men lived uniformly in a healthy climate, were possessed of strong and vigorous frames, were descended from healthy parents, were educated in a hardy and active manner, were possessed of excellent natural dispositions, were placed in comfortable situations in life, were engaged only in healthy occupations, were happily connected in marriage, and kept their passions under due subjection, there would be little occasion for medical rules. But rules are necessary, because some individuals enjoy only a few, while others possess hardly any one of these advantages; and the deficiency must be made up by attention to the results of observation and experience.

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* With a small alteration, Roscommon's observation may be applied to this part of the work:

> " By our condensing what was wrote before,
> " Invention labours less, but judgment more."

It has indeed been asserted, that those who have lived long, (for example, Parr and Jenkins), used no peculiar arts for the preservation of their health; consequently, that the duration of life, has no dependence on manners or customs, or the qualities of particular food[*].

This, however, is an error of no common magnitude. Peasants, labourers, and other hard-working people, more especially those whose occupations require them to be much in the open air, may be considered as following a regulated system of moderation, and hence the higher degree of health which prevails among them and their families. Rules, likewise, they do observe; and those which it is said old Parr recommended, are remarkable for good sense. His advice was, "Keep your head cool by temperance, your feet " warm by exercise: rise early, and go soon to " bed; and if you are inclined to get fat, keep " your eyes open, and your mouth shut[†]." In other words, sleep moderately, and be abstemious in diet; an excellent advice, more especially to those who are inclined to corpulency.

It has also been contended, that those who paid particular attention to their health, and who were always talking and thinking of it, have never attained longevity; but, on the contrary, have led a miserable life, subject to perpetual terror and uneasiness, without deriving any advantage from their care and anxiety. This assertion, however, has been rather rashly made, and is not founded in fact.

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[*] Buffon, vol. ii. p. 480.

[†] Others say, that the latter part of this maxim was, "Never eat till you are hungry; nor drink but when nature requires it." James Donald, an old man, who lately died in Dunbartonshire, aged at least 93, and some imagine above 100, informed the author, that he made it a rule to walk at least two miles every day, either out of doors, in good weather, or within, in bad.

To those who entertain any doubts of the advantages to be derived from the observance of any particular system, I would recommend the precepts and the practice of Plutarch. His rules for the preservation of health are excellent*; and, by observing them, he maintained, to a very advanced age, both his bodily strength and his mental faculties unimpaired.

The celebrated Galen is a still stronger proof of the advantages of a regular plan. He was born with an infirm constitution, and afflicted in his youth with many and severe illnesses; but having arrived at the twenty-eighth year of his age, and finding that there were sure rules for preserving health, he observed them so carefully, that he never laboured under any distemper from that time, except, occasionally, a slight feverish complaint, for a single day, owing to the fatigue which attending the sick necessarily brought upon him†. By these means, he reached the great age of one hundred and forty years. His advice to the readers of his treatise on health, cannot be too strongly recommended. "I beseech "all persons, (says he), who shall read this "work, not to degrade themselves to a level with "the brutes, or the rabble, by gratifying their "sloth, or by eating and drinking promiscuously "whatever pleases their palates, or by indulg-"ing their appetites of every kind. But, whe-"ther they understand physic or not, let them "consult their reason, and observe what agrees, "and what does not agree with them, that, like "wise men, they may adhere to the use of such "things as conduce to their health, and forbear "every thing which, by their own experience, "they find to do them hurt; *and let them be as-"sured, that, by a diligent observation and "practice of this rule, they may enjoy a good "share of health, and seldom stand in need of "physic or physicians.*"

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* His treatise upon this subject is printed entire in the Code of Longevity, second edition, vol. ii. p. 105; and an abstract of his system will be here found, in Part II. Chapter V. on Customs.

† De Sanit. Tuend. lib. 5, c. 2. See also Mackenzie on Health, p. 167. It appears from Volney's account of the self-denial practised by the American Indians, with a view to the preservation of vigour, that they agree in that respect with the ancient Germans, as represented by Tacitus; and that even savages have their rules.

It is justly observed, that "*a life of firm health cannot reasonably* "*be expected, unless it be secured by attention or forbearance.*"—Manual of Health, p. 12.

Cornaro is another memorable example of the efficacy of rules. Reduced, when he had entered the fortieth year of his age, to the very gates of death, and in a manner given up by his physicians, nothing but a regular system, strictly adhered to, could have saved him. His rules, to the extreme to which he carried them, are certainly but little calculated for general adoption. They have established, however, some important truths; in particular, that little sustenance, indeed so small a quantity as twelve ounces of solid, and sixteen ounces of liquid food, per day, is sufficient to preserve the health and existence of an old man, living in a retired and quiet manner, and not obliged to take much fatigue or exercise; and that, by great care, a tendency to passion, which is often so fatal to aged people, may be subdued.

A respectable prelate, Cardinal de Salis, Archbishop of Seville, who died anno 1785, at the advanced age of 110 years, is another instance of the advantage to be derived from rules. When asked what system he observed, he used to tell his friends, "By being old when I was young, "I find myself young now I am old*. I led a "sober and studious, but not a lazy or sedentary "life. My diet was sparing, though delicate; "my liquors, the best wines of Xerez and La "Mancha, of which I never exceeded a pint at "any meal, except in cold weather, when I al-"lowed myself a third more. I rode or walked "every day, except in rainy weather, when I "exercised, within doors, for a couple of hours. "So far I took care of the body; and, as to the "mind, I endeavoured to preserve it in due tem-"per, by a scrupulous obedience to the divine "commands. By these innocent means, I have "arrived at the age of a patriarch, with less in-"jury to my health and constitution, than many "experience at forty†."

It was likewise by an attention to rules, in particular to strict temperance, regular exercise, and judicious habits, that the celebrated John Wesley, notwithstanding a delicate constitution, protracted his existence to near ninety years; and was enabled, during that long period, to go through much personal and mental labour.

These, and other facts of a similar nature which might be adduced, are sufficient proofs of the efficacy of rules, and how much they merit attention.

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* How ably has Shakspeare described the healthy old man!

> Though I look old, yet I am strong and lusty,
> For in my youth I never did apply
> Hot and rebellious liquors in my blood;
> Nor did not, with unbashful forehead, woo
> The means of weakness and debility;
> Therefore my age is as a lusty winter,
> Frostly, but kindly.

As You Like It, Act II. Scene 3.

† See Easton on Longevity, p. 203.

Indeed, the attainment of longevity, if accompanied with good health, is not only an important consideration to the individual, but also to the community to which he belongs. If the mind be not oppressed with care, nor the body by sickness, our declining years often prove the happiest period of our existence. The fever of the passions has then abated; and the anxious and laborious pursuits of ambition and avarice are no longer interesting. Preparing to quit these sublunary scenes, THE HEALTHY VETERAN places his delight—in mental, rather than in corporeal exertions—in performing generous actions to all around him;—in benefiting others by the knowledge and experience he has acquired;—in promoting social intercourse and rational amusement;—and in studiously endeavouring, to leave a character behind him, which shall be afterwards remembered with affection and respect[*].

SECT. V.

Why Attention to Health is so often ineffectual.

WHY an attention to health is so often of little avail, shall next be explained.

1. People seldom attend to their health till it be too late[†]. They never think of it till it be

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[*] See *Cicero de Senectute*, on the pleasures of old age, so happily exemplified by Cornaro.

[†] An ingenious friend of mine has thus described how difficult it is to prevail on the world, in general, to attend to health. The epicure and glutton will not forego his turtle, venison, and high-seasoned dishes, nor the drunkard his wine, gin, and brandy. The lazy will not become active, nor the sloven clean. The tradesman, manufacturer,

lost. When they become feeble, then they wish to get strong. When they are diseased, they wish to become healthy. But when the constitution is broken, and the frame is hastening to dissolution, when death knocks at the portal, is that the proper time to expect the renovation of health?—No!—The foundation should be laid early; the plan or system should begin in youth, and ought afterwards to be resolutely persevered in. Then the happy effects of the system adopted, may be expected in a healthy and comfortable old age*.

2. Much more might be expected from attending to this subject, even at a later period of life, if the means of information were accessible. But though so many volumes have been written upon it, and several of them with great ability, few persons can either purchase or peruse them, in order to discover what rules are applicable to their own particular case. A collection, however, being here made, of the facts and observations, which are *most essential* for the preservation of health, the author hopes that it will now be in the power of every considerate person, to ascertain what rules are suited to his particular situation, and to adopt those which are likely to be most efficacious.

3. The means of preserving health, and attaining longevity, have not hitherto been made the particular study of the physician; nor are they

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and shopkeeper, cannot neglect his business for air or exercise; and, if it is the fashion to go half naked, nothing will induce men or women to clothe themselves properly. In short, *original sin* must be entirely done away, and all its consequent vices and passions, before mankind will pay proper attention to the preservation of health and longevity.

* If we are to live wisely, says a great philosopher, (Adam Ferguson), for the sake of longevity, our system is doubly fortunate; the end is good, and the means are better. Even if we miss the end, we are happy in using the means.

taught at our schools or universities, as so important a branch of science ought to be. Hence an attention to health, which ought to be a primary object in the education of youth, is seldom considered as even a secondary one; while trifling accomplishments, of little importance in the pursuits of life, generally engross the attention of father, son, master, and scholar[*].

4. When people fall into a debilitated state, they are too apt, either to rely on their own skill[†], or to fly for relief to ignorant and presumptuous quacks, instead of trusting to the counsels of men of reputation and of experience in the medical profession. What can be more preposterous? Can any thing be expected from such folly, excepting the prolongation of disease, or a speedy dissolution? If the ablest physicians find it difficult to relieve their patients when they see them daily, and can watch over the whole progress of the disease, how can these ignorant and bold pretenders, cure a variety of disorders, by the same medicine and with the same dose, in the cases of thousands of individuals, whom they never saw, and whose ages, constitutions, complaints, situations in life, &c. are so widely different from each other?

Some represent rules as troublesome; and account all persons as miserable, who live according to any regular system, or attend to such directions as have been recommended to them for the preservation of their health. But they do not take into their consideration, that, by habit, the observance of rules becomes quite easy and familiar, and is attended with no trouble or inconvenience; nay, there is a pleasure, arising from the occupation which it furnishes to the mind, more especially in cases of debility, besides the comfort which the individual feels, and the advantages he derives, when his attention is successful.

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[*] Philosophy of Medicine, Vol. V. p. 312.

[†] We learn from Paulus Jovius, that Alexander (Jerome) a celebrated Cardinal who died anno 1542, ruined his health by the over care he took of it, being a very bad physician to himself, and making use of too many unnecessary medicines. "He enjoyed," says Jovius, "the purple five years, and would undoubtedly have arrived at a good "old age, if he had not, through too great solicitude to preserve his "health, proved a mad and unsuccessful physician to himself, and "corrupted his entrails by improper medicines."—*Paul. Jovius, Eleg.* c. 98, p. 231. See Bayle's Dict. *voce* Alexander (Jerome).

Such, indeed, are the advantages of rules, that though no means can possibly be suggested, by which, considering the circumstances under which man is placed, any great extension of human life can be obtained, yet if any person, whose health is not materially injured, will study the doctrines of health and longevity, and will apply, *before it is too late,* the facts and observations which he may thus acquire, to his own particular case, occasionally calling in the assistance of an intelligent medical friend, when any important alteration takes place in his constitution or bodily functions, he will generally add, from ten to twenty, or even thirty years, TO HIS COMFORTABLE EXISTENCE.

But though a proper attention to health is certainly advisable, anxiety about this, like every thing else, may be carried to an extreme; and, as a recent author has justly observed, a fancied want of health, and a too solicitous attention to personal welfare, is one of the refinements of a luxurious age, when, by the diffusion of wealth, all apprehensions respecting the immediate means of subsistence, are removed from a considerable part of the community*. Hence the multitudes of hypochondriac and nervous people, who fill all the different watering places in the kingdom, whose complaints are commonly groundless, and who, by wishing to cure imaginary illness, often make themselves actually sick. To their attention, the famous epitaph engraved on the tombstone of an Italian noble, who fell a sacrifice to his own imprudence, may be recommended—'I 'was well;—would be better;—Here I am*.'

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* Buchan's Practical Treatise on Sea-Bathing, Preface, p. 8. The care and anxiety thus produced, are of themselves a disease, which counteracts every plan that can be recommended to their attention.

We shall now proceed to explain the plan of the proposed undertaking.

SECT. VI.

Plan of the Work.

THE medical authors, who have hitherto written on health, have commonly arranged their observations under six general heads: 1. Air; 2. Diet; 3. Motion and Rest; 4. Sleeping and Watching; 5. Retention and Excretion; and, 6. The Passions of the Mind. To these they have given the singular name of the six NON-NATURALS; a term which originated from the jargon of the schools†. But as such a mode of explaining the doctrines of Health and Longevity, is in many respects defective and exceptionable, and as, by adhering to it, many important particulars would be totally omitted, it is not proposed to adopt it upon the present occasion.

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* *Stavo ben—Ma per—Star meglio—Sto qui.*

† It was first mentioned by GALEN, who divides things relating to the human body into three classes: Things which are *natural* to it; things which are *non-natural*; and things which are *extra-natural*; (Class 7, lib. de Occul. Partic. tertia, c. 2). From this fantastical distinction, the epithet non-natural first arose. See MACKENZIE, in his History of Health, Introd. p. 4. Some authors on health have likewise gone into the discussion of *non-necessaries* (see Strother's Essay on Sickness and Health, p. 445), in which they include clothing, and the professions of life.

The rules calculated for the preservation of health, and attainment of longevity, may be classed under two heads. 1. Those which relate to objects *essential* for man in every situation, *even in a state of nature ;* as,

1. Air.
2. Liquid Food.
3. Solid Food.
4. Digestion.
5. Exercise.
6. Sleep ; and,
7. The Government of the Passions.

These will be discussed in Part I.

Part II. will comprehend articles *not so essential,* but which require much attention, *more especially from men in a state of civilization and refinement.* These are,

1. Clothing.
2. Habitation.
3. Change of Residence.
4. Customs and Habits which influence Health.
5. Bathing.
6. The means of preventing, and remedying accidents, or common disorders; and,
7. Articles of a miscellaneous nature; as, 1. Rank in life; 2. Education; 3. Professional occupation; 4. Connubial connexion; and, 5. Amusements.

It is here proper to observe, that all the rules, respecting these several articles, are not applicable to every situation, but must vary according to climate, constitution, temperament, the progress of life, &c. ; *and that the object of this publication is, merely to give information regarding the general system that may be pursued, leaving it to each individual, to apply the particular rules therein recommended, according to times and circumstances.*

Such is the plan of the intended Work; which others might doubtless have executed with more ability, but none with a more anxious wish, that it may prove *substantially serviceable,* to the interests of mankind.

CODE

OF

HEALTH AND LONGEVITY.

PART I.

OF THE

ARTICLES ESSENTIAL FOR HEALTH AND LONGEVITY;

NAMELY,

1. AIR.
2. LIQUID FOOD.
3. SOLID FOOD.
4. DIGESTION.
5. LABOUR, OR EXERCISE.
6. SLEEP—AND,
7. THE GOVERNMENT OF THE PASSIONS.

CHAPTER I.

OF AIR.

PRELIMINARY OBSERVATIONS.

THE air is a thin and subtile fluid by which this globe is surrounded. Its importance cannot be questioned. Though apparently unsubstantial, it is essentially necessary for the preservation of both animal and vegetable life.

It belongs not to this work, to enter into any detail of the nature of air, its specific gravity, its total weight, or the relative proportions of the two gases of which it is principally composed. It may be sufficient in general to remark, that, among its other mechanical and useful properties, air is a fluid, transparent, elastic, easily divisible, perpetually in motion, and to a certain degree heavy; but its weight is not quite $\frac{1}{800}$ part of the specific gravity of water. It chiefly consists of two gases, one called *oxygen*, or vital air; of which a trifle more than one-fifth part of the whole volume, is intimately mixed with very nearly four-fifths by measure, of another gas; called *azote*. Besides these two component parts, which form about $\frac{49}{50}$ parts of respirable air, it contains a variety of other substances, as water,—carbonic acid,—animal and vegetable perspirations,—exhalations from water, from the earth, and from different minerals,—saline particles,—dew,—and products from combustion: The air is likewise affected by difference of temperature; and is sometimes tainted by contagious effluvia.

Besides atmospheric air, several elastic fluids have been discovered by modern chemists. The nature and properties of these fluids, and the attempts which have been made to prevent, or to cure disease, by their influence, or what is called *pneumatic medicine*, do not properly come within the scope of our present inquiry.

It may be proper to add, that in addition to its other uses, air is a principal agent in the decomposition of bodies; and likewise in those chemical changes, by which nuisances are not only removed, but become the food of plants, and the sources of fertility.

These general observations shall suffice for the nature of air,—of its constituent gases,—and of the substances occasionally combined with it. It will now be proper more particularly to consider those circumstances regarding air, which are more immediately connected with the existence of man, and the preservation of health. These may be treated of under the following general heads: 1. The general advantages of air to the human species. 2. Its particular uses for respiration. 3. The necessity of fresh air for that purpose. 4. The different qualities of air, and its effects on health. And, 5. The practical rules connected with the function of respiration, and with the nature and qualities of air.

SECT. I. *Of the general Advantages of Air to the Human Species.*

WITHOUT atmospheric air, constituted as it is, men unquestionably, could not enjoy any of the comforts of life, nor even continue in existence. Were it not *transparent*, they could not see: Were it not *elastic*, they could not hear[*]: Were it not *easily divisible*, they could not move from one place to another: Were it not *perpetually in motion*, it would become corrupt and poisonous; navigation could not be carried on, and many useful machines must be laid aside: Were it not *heavier* in the lower regions which men inhabit, than on the tops of the loftiest mountains, the finer vessels in the lungs would swell, and in many cases would burst, by expansion: And were it not that, by *respiration*, or breathing, we imbibe the salutary and vivifying principles with which the atmosphere abounds, the human race would become extinct[†].

SECT. II. *Of the particular Uses of Air for Respiration*[‡].

IT is a well known fact, that though men have lived without food even for several days, they can hardly exist for a few moments without breathing atmospheric air; consequently, that article is, above every other one, essential for animal life.

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[*] Cicero, de Nat. Deorum, lib. 2, c. 33, very happily expresses several of these advantages in the following words, where air is personified: "*Ipse aer nobiscum videt, nobiscum audit, nobiscum sonat, nihil enim eorum sine eo fieri potest.*"

[†] Haller Elem. Physiol. tom. ii. p. 155, has justly remarked, "*Aeris dotes nondum satis notæ sunt.*"

[‡] Dr. Menzies says, that by respiration we mean that function, in which, by the alternate dilatation and contraction of the thorax or chest, a quantity of air is received into the lungs, and afterwards expelled from them.

The uses of breathing atmospheric air, are as follow: 1. It preserves life, which could not exist without it; 2. It restores the florid colour and stimulus of blood; 3. It makes the blood fitter to repair some of the most essential parts of the body; 4. It is the means by which the body is kept at nearly the same standard of heat or temperature; 5. It promotes the circulation of the blood, without the continuance of which death must ensue; and, 6. It enables the body to get rid of substances destructive to health and life.

1. As life cannot possibly be preserved without air, hence respiration goes on while we sleep, as well as when we are awake; and if respiration is stopt, either by a fainting fit, or temporary suspension of the faculties, or when a body is sunk in water, death would speedily ensue, if breathing were not soon to be restored.

2. Respiration gives a florid colour and useful stimulus to the blood. We shall endeavour, in a subsequent part of this work, (Chap. IV.) to explain the manner in which the blood is formed. It is sufficient, for our present purpose, to remark, that the food we eat, after being subjected to various operations, is at last converted into a soft milky juice, technically called *chyle*. This substance, in the course of its circulation, passes through the lungs, and comes in contact with the atmospheric air which is drawn in by those organs. By that contact it receives, from the oxygenous part the air, that red or florid colour by which arterial blood is distinguished. Besides this change in its colour or appearance, it is probable that other properties are acquired, such as the power of stimulating the large vessels in the heart, the lungs, and the arteries, to action.

3. It is from the blood that all the various parts of the body must be repaired; and, in particular, for supplying the waste made in the fleshy or muscular parts of the body, a substance called *fibrina*, must be formed in the blood. This has been hypothetically supposed to be effected by the azotic part of the atmosphere, which the lungs have

The first of these actions is called inspiration: the latter expiration. See a Dissertation on Respiration, translated from the Latin of Dr. Menzies, by Charles Sugrue, p. 2. The learned Etmullerus, in his Dissert. xi. chap. 10, sect. 1 and 16, gives a curious summary of the uses of respiration. See Derham's Physico-Theology, edit. 1798, vol. i. p. 222, note. There is much information upon this subject, in Dr. Bostock's Essay on Respiration.

imbibed; and is another most important advantage arising from respiration.

4. There is no circumstance in the economy of man, more extraordinary than this, that his body, while in a state of health, should always remain of nearly the same temperature. This, in a great measure, depends upon respiration. Part of the air we inspire combines with the blood; it is supposed, that the combined heat, to which its gaseous form was owing, is thus set at liberty, and in some degree increases the temperature of the air we expire, which is partly absorbed by the lungs with the air it breathes[*], and thence is diffused through the entire system, by means of the blood. Were it not for this constant absorption of heat, the temperature of men, and of other animals, could never be so much higher than that of the surrounding atmosphere, notwithstanding the heat which they are continually giving out to the colder surrounding bodies.

5. The circulation of the blood is absolutely essential for the continuance of animal life. Without respiration, this could not be effected[†]. By the heat, and other properties thus obtained from the atmosphere, the blood acquires those stimulating powers, by the action of which the heart is alternately contracted, and the circulation regularly carried on.

6. Nor is this all. Every animal would soon perish, unless it had the means of expelling those substances which are either noxious in themselves, or of which any great accumulation would be pernicious. This expulsion is most happily brought about through the medium of respiration. By the lungs, a quantity of about 37 ounces of carbonic acid gas, is usually emitted in the course of one day, by a full grown person; a quantity, which, if retained in the body, would be extremely prejudicial. By the same means, any superfluous moisture is extracted from the blood, and emitted. The quantity must vary; but generally exceeds 20 ounces per day. The blood is thus kept of a proper consistency, neither too fluid nor too dense[‡].

Considering all these circumstances, is it not surprising, that while men are so attentive to their food, and employ so much trouble and expence in obtaining and preparing it, they should not bestow more attention upon particulars which are equally, if not still more essential, namely, breathing pure air, and avoiding noxious exhalations, which are the parents of disease, and the forerunners of death?

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[*] This point seems to be satisfactorily proved in Menzies's Dissertation on Respiration, translated by Sugrue, (8vo. Edinburgh, 1796), p. 34, 35, &c.

[†] The blood cannot circulate through the body unless it pass the lungs, which it does but partially, unless the lungs be inflated.—*Method of Preserving Health*, p. 197.

[‡] The subject of respiration is ably explained in Thomson's System of Chemistry, vol. iv. p. 708.

SECT. III. *On the Necessity of Fresh Air for Respiration.*

WHEN the importance of respiration is considered, it will not be wondered at, that the air, according to its different qualities, can alter, and either greatly improve, or entirely vitiate, the whole texture of the blood, and the nature of the animal juices*. The reason of fresh air being necessary is, that where oxygen is exhausted, no animal can live at all, nor for any considerable length of time, where it exists in too small a proportion; and when unwholesome gases are combined with it, disease always, and often death, ensues. Fresh air, therefore, is found as necessary for man, as clear water is to fishes; and thence the choice of good air, is accounted, by Hippocrates, a circumstance claiming the first rank in the regimen of health. This is particularly the case in regard to children; for it is a melancholy fact, that, in a great measure owing to the impurity of the air of London, one half of the children born there, die before they are two years old. In the lying-in hospital at Dublin, the proportion was found still greater; for, in the space of four years, ending anno 1784, no less a number than 2944 infants, out of 7650, died within the first fortnight after their birth. It was fortunately discovered, that this melancholy circumstance arose, from their not having a sufficient quantity of good air to breathe. The hospital was therefore completely ventilated; the consequence of which was, that the proportions of deaths was reduced to 279. Hence there was reason to suppose, that out of 2944, who had died in the space of four years before, no less a number than 2655 had perished solely from the want of a due supply of air†.

A number of other facts prove the advantages of fresh air, and the necessity of having it frequently renewed.

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* Cheyne's Essay on Health and Long Life, p. 6, No. II.

† Garnett's Lecture on the Preservation of Health, p. 64, 65; also, Thornton's Phil. of Medicine, vol. i. p. 394, where the fact is more fully and minutely detailed. In hospitals, the ceilings are generally too low, and the windows too small, hence a want of good air, which is attended with the most fatal effects.

The short space of time during which a person can exist in a diving-bell; some circumstances which have occurred in the African slave-trade; and the well known story of the black-hole or prison of Calcutta, where Mr. Holwell and his companions suffered so severely from want of fresh air, that out of 146 Englishmen, confined for scarcely 12 hours, only 23 survived[*]; put this matter beyond a doubt[†].

The want of fresh air is likewise often felt in crowded assemblies. It is calculated, that each person consumes about five cubic feet of air in an hour[‡], or, in other words, deprives such a quantity of air of its oxygen, or vital principle. If a hundred persons, therefore, were confined in a room 30 feet long, 25 broad, and 30 high, the whole air in that apartment, consisting of 22,500 cubic feet, unless renewed, would be rendered noxious in about *four hours and a half;* and the same scene would take place which was exhibited in the black hole of Calcutta. Is it then wonderful that crowded rooms, where routs and other assemblies are held, should be so pernicious to the health of those who frequent them? For besides the destruction of oxygen, and the great increase of carbonic acid, that perspiration which is expelled as a nuisance by one individual, must necessarily be injurious to others.

Theatres are seldom cold or damp, yet the entertainments exhibited there, more especially when they are much crowded, or in warm weather, may be attended with injury, owing to the impurity of the air.

The celebrated Lavoisier found, at a theatrical entertainment, that before the play began, the air contained the following proportion of its usual substances:

Oxygen	27
Azote	73
Total	100

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[*] The history of this extraordinary event is very ably given by Dr. Thornton. Philosophy of Medicine, vol. i. p 325.

[†] See Beddoes's Introductory Lecture, p. 76, note. Adair's Medical Cautions, p. 40. As a melancholy proof of the importance of fresh air, we are told, that 18 charity children, and a servant, lay in an apartment of a house in King-street, Golden-square, when, to render the room warmer, they shut up the chimney, and used every other means to exclude the cold air, the consequence of which was, that the servant, and ten of the children, were seized with various alarming symptoms of a disorder nearly similar, accompanied with excruciating pains, convulsions, &c.

[‡] Thornton's Phil. of Medicine, vol. i. p. 333. By an experiment of the

But towards the conclusion of the piece, the air of the theatre was as follows:

Oxygen	21
Azote	76½
Carbonic acid or fixed air	2½
Total	100

Hence the oxygen or vital air was diminished in the proportion of, from 27 to 21, or nearly one-fourth, and in the same proportion was less fit for respiration than before, besides having a considerable quantity of carbonic acid accumulated in it*.

When, from any cause, air is suffered to become foul and noxious, it weakens the springs of life, and generates the most malignant and contagious diseases, and from being the first support of life, is thus rendered, by stagnation, so putrid, as to have all the pernicious effects of poison†. It is from stagnation, that the air of old wells, and of caves under ground, becomes so pernicious: and it is the source from which that malignant fever, the jail distemper, takes its rise.

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celebrated Hales, a gallon of air is spoiled by the steams of the breath in one minute, so as to be unfit for respiration; hence a hogshead, or 63 gallons, would hardly supply a human creature for an hour.

* Among the places of public resort, there is none where a corrupted atmosphere is more frequently to be met with than in the British House of Commons. The room, where that great council meets, was large enough for the numbers which constituted that assembly, whilst it contained 513 members, or the representatives of England alone, but since the addition of no less a number than 145 members by the unions with Scotland and Ireland, the same apartment, notwithstanding some attempts to enlarge it, is no longer fit to hold the representatives of the united empire, and far less the crowds who wish to be present when any interesting debate is to take place. Among the means taken for warming the air, that of introducing charcoal into the house was certainly the most extraordinary, for though it might give some heat, yet the air was thereby rendered in the highest degree impure and noxious. The vapour of charcoal produces, particularly in close apartments, dangerous, and frequently fatal, effects, not only by diminishing the quantity of oxygen in the air, but also by acting directly as a poison on the system; for animals confined in a given quantity of air, die long before the whole oxygen is consumed, in consequence of the carbonic acid gas formed during respiration. Now burning charcoal destroys the oxygen of the atmosphere, and forms that deleterious gas, (the carbonic acid), much more rapidly than respiration does, and must therefore be still more injurious. The building of a new house, is certainly the only means that can possibly be thought of, completely to remedy the defects of the old one; but, until that event takes place, the labours of an intelligent committee could not be better bestowed, than in considering, how the atmosphere of the house, in its present state, could best be improved.

† Adair, p. 41. Valangin, p. 51.

SECT. IV. *Of the Qualities of the Air, and their Effects on Health.*

THE qualities of the air depend on its being hot or cold, dry or moist, light or heavy, inland or maritime, breathed in the day, or in the night. It is well known what important effects these various circumstances produce on the health of the human body.

1. *Hot Air.*—The effects of hot air will be easily understood, if we consider for a moment, that the air either raises, or reduces to its own temperature, those bodies which it surrounds or penetrates [*]. When we see, indeed, after the colds of winter, how rapidly the heat of summer revives all nature, making the plants to grow, the trees to blossom, and every animal to rejoice, we cannot suppose that man should be the only exception. But its principal effects, in regard to the human species, result from this, that the quantity of perspiration, sensible and insensible, is, in a great measure, regulated by the degree of heat applied to the human body[†]. It is supposed that in England, at an average of the whole year, perspiration scarcely equals all the other excretions, though in summer it is nearly double to that of winter; whereas, in the air of Padua, during the whole year, the perspiration is supposed to be, to the other excretions, as five to three, and in tropical climates, it is probably still greater, especially to the natives of Europe.

Though the human body can bear considerable variations of temperature, yet the heat in the atmosphere, most congenial to the human frame, is from 50 to 70 of Fahrenheit. That temperature has generally prevailed in the countries most famed for intellectual exertion, and strength both of body and mind. When that proportion is much exceeded, the fibres are lengthened and relaxed, particularly in the young and growing [‡], and hence proceeds the sensation of faintishness and debility in a hot day[§]. It is believed that men cannot live long in an air much hotter than their own bodies, the average of which is calculated in children at 90°, and in adult persons at 98°[*], though both will bear a more violent heat, for a short period of time.

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[*] Valangin on Diet, &c. p. 20.

[†] Arbuthnot on Air, p. 50.

[‡] On that account, the children of Europeans should be sent from the East Indies to Europe, till their form and stamina are established.

[§] To prove the effects of heat on animals, the celebrated Boerhaave put a sparrow and a dog into a sugar-baker's drying-room, where the air was heated to 146, or 54° beyond that of the human body. The sparrow died in two minutes, and the dog in twenty-eight.—See Arbuthnot on Air, p. 46. The heat was calculated according to Hales's thermometer.

When the air is extremely hot, by promoting perspiration, it dissipates the thinner, watery, and volatile parts of the blood, and by thickening that source of nourishment and life, lays a foundation for many disorders, more especially fevers, of a bilious, putrid, ardent, and malignant nature. Hence, an extremely hot climate is far from being wholesome.

2. *Cold Air.*—It is evident that cold must have effects on the human body, directly opposite to those of heat. Cold air braces the fibres, not only by its condensing quality, but by rendering the air drier. By bracing the fibres also, and more strongly condensing the fluids, it produces that strength and activity, which is so sensibly felt in clear frosty weather, when the cold is not too intense[†]. On the other hand, by contracting the fibres of the skin, and cooling the blood too much in those vessels which are most exposed to the air, some of the grosser parts, and most acrid or saline particles of the perspirable matter, which would evaporate in warm weather, are retained in cold, and produce coughs, scurvies, and other disorders to which cold countries are liable. It is strongly in their favour, however, that such regions are frequently affected by wind; hence the air is much more purified than in hot climates.

3. *Moist Air.*—It has been well observed, that a little more or less of moisture in the air, can be of little importance to man, whose body is composed in a great degree of fluids, whose blood and juices are so watery, and who can swallow quantities of water and weak liquors daily, without inconvenience. Air, though moderately moist, therefore, can have no ill effect on the constitution, though, if it is saturated with moisture, it is unwholesome[‡]. Moist weather, indeed, even when accompanied by cold, is unfavourable to health, as is often fatally experienced by delicate people, during the fogs of London and Paris; but when it is accompanied by heat, it is still more prejudicial. Hence the great

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[*] The experiments of Blagden and his friends were made in rooms above the boiling temperature. A girl has gone into a baker's oven nearly 400°.

[†] Cold air, in most people, also increases the appetite. It is remarkable, in the history of such as perished by cold in northern countries, that they kept their appetite to the last.—*Arbuthnot on Air*, p. 209.

[‡] Hippocrates, of old, observed that the Phasians were tall, soft, bloated and pale, on account of the excessive moisture of the air they breathed; their country being marshy, hot, watery, woody, and subject to violent showers, at all seasons.

mortality, during the hot season, at Batavia, and in some parts of America. When the air is impregnated with vapours from putrid marshes, it is found pernicious, not from its moisture, but its putridity.

4. *Dry Air.*—When the air is dry, it contains a number of saline and other particles, which, by rain or moisture, might have been carried down to the surface of the earth. It also imbibes animal and vegetable effluvia, which have a considerable influence on the body. By great dryness in the air, the very texture and situation of the pores of the skin may be altered. A dry air, if not too warm, is both agreeable and healthy, but when accompanied with great heat, is attended with the most fatal consequences, both to animals and vegetables[*]. Even in England it has been observed, that extremely dry seasons have been found more dangerous to human bodies than wet[†].

5. *Light Air.*—It is found by experience, that the lightness of air, on the tops of high mountains, is unfavourable to respiration. Persons in these elevated situations, are obliged to take breath oftener than in the lower regions; and are sometimes so violently affected, as to throw up blood, by the straining which the rarity of the atmosphere occasions[‡]. A certain portion of the pressure of the at-

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[*] See the description of the Harmatan and the Sirocco, in Gregory's Economy of Nature, vol. i. p. 477, 478, &c. In Egypt, during a certain period of summer, the hot winds blow, called by the inhabitants *campsin*, from their continuance for fifty days, though they have no determined time, but last sometimes more than three months. The inhabitants, during the campsin, live much under ground.—*Arbuthnot on Air.*

[†] Arbuthnot on Air, p. 183. Great droughts, he observes, have always been found noxious to the human body. Previous to the destructive epidemical distempers which took place in the latter end of the year 1732, and beginning of 1733, there was a great drought in England, and in the greatest part of Europe, which ultimately proved extremely fatal to all the places affected by it. Great droughts exert their effects after the surface of the earth is again opened by moisture, and the perspiration of the ground, which was long suppressed, is suddenly restored. It is probable that the earth then emits several new effluvia, hurtful to human bodies; and this appeared to be the case, by the thick and stinking fogs which succeeded the rain that had fallen before. See Arbuthnot on Air, p. 194, 199. Dr. Bisset remarks, that the inhabitants of places on the sea coast, are less subject to those diseases which generally result from an exceeding hot and dry summer, than those of inland towns.—*Essay on the Medical Constitution of Great Britain*, p. 3.—This is a circumstance much in favour of maritime situations.

[‡] Derham's Physico-Theology, vol. i. p. 11.

Lord Bacon (Nov. Organ. Scient. lib. 2, aphor. 12), says, when certain travellers mounted to the top of Olympus, the air was so thin that they were obliged to hold sponges, dipped in vinegar and water, to their noses and mouths. Also, that the air on the top of Teneriffe is so sharp as to mosphere, being taken off the veins or blood-vessels, they expand and swell, by which a shortness of breath, and a spitting of blood are occasioned. When fermented liquors are carried in bottles to that height, the air contained in the liquor rarefies as much as the air without, by which means the bottles are burst. But though light air, when carried to an extreme, is so highly prejudicial, yet, in moderation, it may be of use; and hence the air of mountainous districts, is found to be of service in several disorders. In general, however, the air of lofty mountains is of too light and subtile a nature; and though it may be calculated for the eagle, and other descriptions of birds, yet it does not, in general, agree with the constitution of man.

6. *Heavy Air.*—Air in some measure compressed, or rather heavy, if it be dry, is not unfavourable to the human frame. It appears by authentic experiments, that animals live longer, when breathing a like quantity of compressed, than uncompressed air; and the weight of the atmosphere compresses the air in valleys and champaign countries, and consequently renders such air, better calculated to support great numbers of inhabitants[*]. It must also contain, for its bulk, a greater quantity of oxygen, or vital air[†].

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cause violent pains in the eyes; and so thin and light, as to make many vomit.

The air on one very high mountain of Peru, according to d'Acosta, is mortal at the first blast; and, by its coldness, dead bodies are preserved from putrefaction. At the top of one of these Peruvian mountains, which probably are the highest in the world, he and his company were seized with bilious vomitings, perhaps from the thinness as well as coldness of the air.—*Arbuthnot on Air*, p. 81.—But these assertions by d'Acosta seem to be greatly exaggerated. Humboldt has lately ascended one of the peaks of the Andes, more than 16,000 feet above the level of the sea. De Saussure, in his "*Voyages dans les Alpes*," has given the best and most accurate account of highly rarified air, the effects of which he experienced, to their greatest extent, on Mont Blanc. They were exceedingly disagreeable, but not so pernicious as other travellers have described.

[*] It is of great importance that the air should be of a due gravity and elasticity, that it may distend the lungs sufficiently; for however stronger constitutions can bear either an increased or diminished weight of the atmosphere, and can live on the tops of the highest mountains, or in the bottom of the lowest valleys, yet the sick, weak, and the valetudinary, cannot bear it.—*Short's Observations on Bills of Mortality*, p. 420.

[†] Dr. C. Harrison, of Horncastle, has found, that the air of the fens or marshes of Lincolnshire, is not favourable to the production of pulmonary consumption. Though that scourge of this island is reported to destroy annually such numbers of its inhabitants, yet in the fenny districts, it is rarely to be met with; whereas in the high-lying divisions of the county, *(the wolds)*, where the air is less moist and bland, that disorder, originating in scrofula, is much more frequent. He further found, in a case or two of the kind which he adduces, that a removal from the high to the lower fenny part of the county, had repeatedly and uniformly the best effects.

7. *Inland Air.*—The air of inland districts must have qualities very different from those on the sea-coast. In the interior parts of a country, the air must partake much of the qualities of the soil and of its productions. Much, also, must depend upon the state of its cultivation. Even countries naturally unwholesome, if cleared of wood, and rendered fertile, become immediately healthy. It is also to be observed, that the central countries of great continents are colder, especially in winter, than those that have the sea-air. Moscow, in the same latitude with Edinburgh, is much colder, during the winter months, though perhaps warmer in the summer season[*].

8. *Maritime Air.*—The nature of the air at sea is, in various respects, very different from that which is to be met with in the inland parts of the country. 1. Sea air is more humid, owing to the great quantity of vapour which is constantly arising from the surface of such an extent of water. 2. The air at sea is more frequently agitated, and storms are more violent, and continue longer there than at land[†]. 3. In the same country, the air is found of very different temperatures, in regard to heat and cold, and possessing very different qualities; but, at sea, the air is more uniform, and less susceptible of variety. 4. The air at sea never stagnates, having no impediments to its course, from mountains, hills, or forests, and being continually agitated by the winds, currents, and the constant flux and reflux of the tides. 5. Sea-air is warmer, more especially in the extreme cold of winter, than the air which is incumbent on

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Indeed wherever there is a spitting of blood, it is a sign that the situation of the place is too high, and the air too light. The proper plan to pursue, therefore, is, to fly to a flat or deep country, where the air is heavy. The weight of that sort of air must prevent the vessels from being swelled to any improper size: and the spitting of blood, which originated from the extension, must be removed.

[*] Arbuthnot on Air, p. 78.

Strother, in his Essays on Sickness and Health, p. 26, contends, that the midland counties in England are the most healthy, and less subject to a variety of weather. He observes, that when the easterly or westerly winds give rains in abundance to the coasts, yet the middle way, between sea and sea, has then been calm and dry; the clouds brought from either sea, drop before they come mid-way. The accounts which are given of the air of Cheltenham seem to justify these observations.

[†] In the British Encyclopedia, *voce* Aerology, p. 155, it is stated, that Dr. Dobson of Liverpool found sea-water contained air, superior in quality to that of the atmosphere. Hence the utility of sea voyages to invalids may arise. Arbuthnot, on the other hand, contends, that were it not for constant winds, which blow off the coat of vapours which invest the ocean, sea-air would be intolerable to human bodies.—*On Air*, p. 70.

the earth[*]: hence those who obtain a livelihood by collecting limpets, and other shell-fish, and who are constantly inhaling sea spray, are never affected with cough[†]. 6. A portion of sea-salt is also generally raised by the spray, and perhaps by the vapour of the sea, which is found to be attended with rather beneficial effects[‡]. 7. Sea-air, also, is not so liable as land air, to be deteriorated by the putrefaction of animal and of vegetable substances, the respiration of animals, the support of combustion, and exhalations of all descriptions.

9. *Night Air.*—This is, in general, more unwholesome than what is breathed in the day time; and, about sunset, it is particularly injurious, for then a greater quantity of dew falls than even at midnight.

Such are the various sorts of atmospheric air, and the general qualities of each. It is proper, however, to observe, that, by custom[§], man may be reconciled to different sorts of air; and that there is no animal so capable of being made to agree with so many various climates. Generally speaking, the animals of warm countries cannot subsist in cold. African animals can hardly endure the coldness of the open air of England, which is too warm for rein-deer; yet man can live in the hottest air under the sun, and also far within the polar circles of frigid zone. What makes the difference between mankind and other animals, is, that man is assisted by many contrivances of art to bear extremities of heat and cold. Brutes, left to their own choice, as far as they can procure their ends by local motion, chuse the countries and climates most adapted to their constitutions; and so perhaps would men also, if they were not endued with the faculty of invention, and of transmitting their inventions to their posterity. Man likewise lives in society, and, though endowed with reason, is subject to passions, to which he sacrifices the greatest blessings of health, and life itself[*].

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[*] It is the saline matter in sea-water that makes getting wet with it inoffensive. When seamen are exposed to rain at sea, they are apt to catch cold.

[†] See Buchan's Essay on Sea Bathing, p. 167. It is said, that persons employed in the manufactures of glass and salt, are likewise exempted from coughs and colds.

[‡] These particulars are more fully explained in a valuable work, entitled, The Use of Sea Voyages in Medicine, by Ebenezer Gilchrist, M.D. one volume, octavo, London, 1757.

[§] The effects of custom, in regard to air, cannot be more strongly exemplified than by this singular circumstance, that a mouse or a duck, accustomed to an exhausted receiver, can bear it longer than a fresh one, so much are all animals the children of custom.—*Arbuthnot on Air*, p. 97.—*Philos. Transactions*, abridged by Louth, p. 229, 230.

Sect. V. *On the Practical Rules connected with the function of Respiration, and with the Nature and Qualities of Air.*

These rules may be considered as connected, 1. With the nature and qualities of the soil; 2. With the climate and seasons; 3. With the age and condition of the individual; and, 4. With his place of residence.

1. *Rules connected with the Nature and Qualities of the Soil.*

It has been justly remarked, that we are not yet possessed of a complete test of the salubrity of air in general; and, till this can be obtained, our only guide must be experience. There are some indications, however, which prove the healthiness of a country; as, 1. The quality of springs, as they must denote the nature of the air; for they imbibe the saline and mineral exhalations of the ground: Where the water, therefore, is sweet and good, the air probably partakes of the same qualities; 2. If the complexion of the inhabitants is clear and vivid, it is the sign of a wholesome air; and, 3. Where, in porportion to the number of the inhabitants, many reach a considerable age, (which will appear from the bills of mortality), the air is to be accounted healthy[†]. On the other hand, dampness of wainscot, rotting of furniture, tarnishing of metals, rusting of iron, efflorescence of salt upon any bodies, discolorations of silks and linens, and more particularly putrid fevers, and untimely death, are indications of dampness and insalubrity.

The local qualities of the air, in no small degree, depend upon the exhalations of the soil, and those of its neighbourhood, which may be brought to it by winds. It appears, however, from the careful inspection of several registers, that more regard ought to be had to the surface, and the subsoil, than to its subterraneous contents.

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[*] Arbuthnot on Air, p. 92, 93.

[†] Shakespear gives another mark of pure air—

"The guest of summer,
The temple-haunting martlet, does approve,
By his lov'd masonry, that heaven's breath
Smells wooingly here:
Where they most breed and haunt, I have observ'd,
The air is delicate." *Macbeth*, Act 1. Scene 6.

A soil gravelly, chalky, or sandy, has but little perspiration, and imbibes the moisture that falls upon it. It is, therefore, free from noxious exhalations.

From a rich, fat, and marshy soil, a great quantity and variety of vapours are raised, by the action of the sun, and the heat which it communicates to the surface of the earth. These vapours, consisting of water, oils, salts, and several other ingredients, must variously affect the inhabitants by their contents, more especially at certain times and periods of the year. This accounts for a common observation, that rich soils, on the banks of slow-running rivers, in hot countries, are extremely unwholesome.

Mere watery exhalations are not so unwholesome, if they come from soils such as clay, which retain water, provided it does not stagnate and become corrupt. Hence the moisture from peat-mosses, more especially on the sides of hills, is not pernicious to health; because the superfluous waters run down to the streamlets, or lower grounds. Nor would the exhalations from ditches be injurious, if they were carefully cleaned of weeds and other noxious matters.

Here it may be proper to advert to an old method of improving health, that of inhaling the vapour of fresh turned up earth, which has in it something strengthening and refreshing, even in small quantities; and, consequently, it must have a great influence on a larger scale. Lord Bacon was acquainted with a very old man, who, every morning, as soon as he awoke, caused a piece of earth to be held before his nose, that he might inhale the vapour. He recommends, therefore, the smell of fresh earth, which may be obtained by following the plough, or digging up the earth, particularly in the spring. Hufeland[*] has lately recommended these means to consumptive persons, who may thus inhale the vapour, either in the open air, or in an apartment. The sensation produced by it, is like that felt on inhaling vital air, and is refreshing in a considerable degree.

2. *Rules connected with the Climate and Season.*

It is contended by some authors, that an uniformity of climate is desirable, as being favourable to health and long life[†]. But Hippocrates affirms, that such uniformity is not to be wished for. It is the equality of the temperature of the seasons, joined to the flatness of the surface, which renders Asiatic nations indolent and lazy, slavish, submissive to masters, and unwilling to quit their ease or their families, or to subject themselves to labour or hardships; whereas, in countries where there are mountains and valleys, a great variety of heat and cold, and where, by the alternations of the weather, and the necessity of labour, both the mind and the body must be constantly employed, the men are courageous, disposed to activity, labour, and exercise; and become, in every respect, a superior race of beings*. Those, therefore, who live in such climates, have no reason to be dissatisfied with their condition.

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[*] See his Journal, vol. i. p. 386.

[†] Hufeland, vol. i. p. 268, 269.

It must be admitted, at the same time, that the frequent and sudden change of seasons† does affect the health, the constitution, and the spirits; and in this country, in particular, those changes are so very sudden, that if we were not accustomed to them, they would necessarily affect us more than they usually do. Hence it is the more desirable to study this subject attentively, that we may be fully aware of the means by which the dangers of a varied climate can best be prevented.

Medical persons, in particular, ought to consider, with peculiar care, what weather may be expected at the different seasons of the year, in the districts where they practise; the signs also of good or a bad seasons‡, and the variations of which they are susceptible. By attention to this important subject, Hippocrates supposed he could prognosticate, from the nature of one season, the diseases likely to prevail in the next. Sydenham, also, who was a sagacious and indefatigable observer, attempted, by the same means, to foresee future diseases, and to make use of the proper measures for preventing them. Arbuthnot has treated this subject with great ability; and, from his valuable work on the subject of Air, many of the following observations are extracted§.

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* Clifton's Hippocrates. On Air, Water, and Situation, p. 32.

† In a work entitled "Le Medicin des Dames, ou l'Art de les Conserver "en Santé," printed at Paris, in one vol. 8vo. anno 1771, there are some ingenious observations on the four seasons of the year, applicable to the meridian of France. Perhaps the best work on the medical climate of Great Britain, is "The Manual of Health, or, the Invalid conducted safely "through the Seasons," printed by Johnson, St. Paul's Church-Yard, London, 1806, written by Dr. Beddoes.

‡ It has been observed, that the silence of grasshoppers, the croaking of frogs, and bees not making honey, are signs of a bad season.

§ Dr. Strother, in his Treatise on the Non-naturals, p. 91, justly re-

1. *Hot Climates.*—When the air is rarefied by heat, when the body is relaxed by it, and all its humours put in motion, besides a proper attention to clothing, diet, exercise, &c. which will be afterwards explained, it is also necessary to guard against the effects of heat, by rest, shade, ventilators, and by living even in grottoes, when the heat is intense *; nor is the latter part of this advice unsanctioned by experience. Lord Bacon ascribes the longevity of the ancients, partly to their living in caves; and I am informed from most respectable authority, that a lady, who had gone from London to Virginia, had found the summer heat so intolerable, that having fortunately discovered, near her house, a large natural cave, she, and many of her neighbours, frequently spent the day there, totally unmolested by the greatest heats, and found the utmost benefit from it. The Italians also seek for coolness in summer, either by sitting in dark rooms on the ground-floor, or those with a northern aspect; and in very hot climates, a part of every house ought to be constructed in the grotto style, or with arched vaults, so as to exclude the violence of the heat †.

2. *Cold Climates.*—In cold climates, as long as the inhabitants of a country continue uncontaminated by luxurious habits, exercise, and even fatigue, are habitual to them; their natural diversions being all of the athletic or violent kind. But the softness and effeminacy of modern manners has both deprived us of our natural defence against

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marks, that the nature and effect of air are peculiarly entitled to the attention of medical men, for the choice of it is very often a necessary part of their advice. Some people find themselves much disordered in one sort of air and weather, yet are perfectly well in another, the causes of which will easily be discovered by any one who thoroughly understands the physiology of the air, and the constitution of his patient. Most people find the effects of good air, more especially in stomachic and pectoral cases, and ought to be sent to those places where it can be had in the greatest perfection.

* This is certainly the most effectual means of avoiding strokes of the sun, which are so fatal in hot climates. On this malady, and the means of preventing or of curing it, see Tissot's Advice to People in general, vol. i. chap. x. In climates where there is any chance of insolation, the head-dress should either be a turban, as the Eastern nations have adopted from experience, or a round hat with a high crown, and an interval between the head and the crown. Some travellers in Africa have also found benefit by cutting valves in their hats, to allow the heated or rarefied air to escape, and fresh air to be admitted.

† It has been observed in China, that wet clothes exposed to the air, are colder than the temperature of the atmosphere, as long as they retain any moisture. Accordingly, in that country, rooms and galleries formed of canvas, are kept constantly wet, to give coldness to the air within.—*Irwin's Essays on Chemical Subjects*, p. 215.

the diseases most incident to a cold climate, and subjected us to all the inconveniences of a warm one. Hence people are afraid of going out into a cold atmosphere, as in the highest degree hazardous. They certainly ought to avoid rushing from heated rooms into it, without great precautions. But if they have not been previously overheated, and will conduct themselves properly afterwards, they will never be in the least danger from cold air. Indeed, the action of cold, unless it be excessive, or accompanied with great moisture, rarely produces any bad effects*.

A common cold, the parent of so many other disorders, is generally produced in the following manner:—When a person in cold weather goes into the open air, every time he draws in his breath, the cold air passes through his nostrils and windpipe into the lungs, and, consequently, diminishes the heat of these parts. As long as the person continues in the cold air, he feels no bad effects from it; but as soon as he returns home, he approaches the fire to warm himself, and very often takes some warm and comfortable drink, *to keep out the cold,* as it is said. The inevitable consequence is, that he will first perceive a glow within his nostrils and breast, as well as over the whole surface of the body. Soon afterwards a disagreeable dryness and huskiness will be felt in the nostrils and breast. By and by a short, dry, tickling cough comes on. He feels a shivering, which makes him draw nearer to the fire, but all to no purpose; the more he tries to heat himself, the more he becomes chilled. All the mischief is here caused by the violent action of the heat; and the complaints, which are thence produced, might, with more propriety, be called *heats,* rather than *colds.*

These complaints may easily be avoided, by adopting the following rules.

When you come out of a very cold atmosphere, you should not at first go into a room that has a fire in it, or, if you cannot avoid that, you should keep for a considerable time at as great a distance as possible, and, above all, refrain from taking warm or strong liquors when you are cold. This rule is founded upon the same principle as in the case of any part of the body being frost-bitten. If it were brought to the fire, it would soon mortify, whereas, if rubbed with snow, no bad consequences follow from it. Hence, if the following rule was strictly observed, *When the whole body, or any part of it is chilled, bring it to its natural feeling and warmth by degrees*—the frequent colds we experience in winter would, in a great measure, be prevented. The application of the flesh-brush to the neck and hands, is with this view of great use. On the other hand, the practice, after a cold is caught, of making the room the person sits in warmer than usual, increasing the quantity of bed-clothes, wrapping himself up in flannel, and, particularly, drinking a large quantity of barley-water, gruel, or tea, almost boiling hot, by way of diluting, as it is called, and forcing a perspiration—all this will infallibly make the disorder worse, in the same manner as confining inoculated persons in warm rooms, would make their small-pox more violent[*].

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* Hence the maxim, "You need not be apprehensive of rain, *or* cold: But rain *and* cold are highly injurious."

In regard to the cure of a common cold, it depends on attention to, 1. Temperature; 2. Diet; and, 3. Medicine.

1. *Temperature.*—In the early stages of a catarrh, rather a cold temperature, at least one not exceeding from 40 to 50 degrees, is the most likely to be salutary. The covering of the body also, both by day, and during the night, should be as light, as the external temperature will admit of.

2. *Diet.*—A rigid attention to regimen is not necessary whenever a slight cold occurs; but if it increases, or continues for any length of time, stimulating food is to be avoided, in particular, wine and spirituous liquors; the solid food should be light, and easy of digestion, and the liquid cooling, as toast and water, or acidulated soda water.

3. *Medicine.*—This branch of the subject, properly belongs to the medical department; and is ably discussed in a work, restricted to the investigation of the disorder in question[†]. Indeed professional advice, where attainable, ought

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[*] See Garnett's Lecture on the Preservation of Health, p. 72, &c.; a work which contains a number of excellent observations, and renders the untimely death of the author a circumstance much to be lamented. Mr. Spence of Drypool, Hull, informs me, that he has ascertained the importance of Dr. Garnett's directions, for avoiding that plague of our climate, *a cold*, by his own experience. He adds, that however inaccurate some parts of the Brunonian theory may be, he is persuaded it is correct, in so far as regards the *general* cause of taking cold. Formerly, before he was acquainted with its doctrines on this point, he used to be scarcely ever free from a cold in the head all the winter; but since he has avoided coming to the fire, after being exposed to cold, he has rarely known what it is to be plagued with that disorder. The best remedies for a cold he finds to be temperance, and plenty of cold water.

[†] See White's Popular Essay on the disorder, familiarly termed a cold, 1 vol. 8vo. printed ann. 1807, p. 133.

not to be neglected, if the complaint is either violent, or likely to continue. Mr. White strongly recommends a simple remedy, with the strongest conviction of its efficacy, if taken before the disease has made much progress, namely, *frequent draughts of cold fluids, combined with nauseating doses of emetics*[*]. Indeed he has known symptoms of a catarrh, which threatened to be of the most severe nature, entirely removed, by simply drinking three glasses of cold water, at short intervals; and in many parts of England, among the lower order of people, a large glass of cold spring water, taken going to bed, is found to be a successful remedy.

It is the more necessary to attend to these observations, as external cold generally constitutes the chief exciting cause of the epidemic, and other prevailing diseases in Great Britain. At the same time, distempers of great malignity, are much greater strangers here, than in most countries on the continent. The weather is seldom hot or cold in extremes, being so much tempered by sea winds, which fan the whole circumference of the island. The moisture of the British air also, by its tendency to relax the fibres, promotes growth; and the coldness of the temperature, which seldom prevails to any immoderate height, condenses the solids and fluids, and strengthens the whole body. Hence, in some measure it is, that the natives of Great Britain, in general, are bigger bodied[†], broader chested[‡], and more robust than those of most other countries, and that a greater proportion of the inhabitants of this island, at least on healthful farms and villages, where the people are generally most temperate, and undebauched by spirituous liquors, preserve better health, and live to a greater age, than those of the neighbouring continent.

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[*] The dose recommended by Mr. White, in common cases, is as follows; Take of emetic tartar (*antimonium tartarisatum*) four grains; of pure cold water, two pints. Dissolve the emetic Tartar in the water by trituration, of this solution from a quarter to half a pint, may be taken every five or six hours. For other receipts, the work itself must be consulted.

[†] Bisset's Essay on the Medical Constitution of Great Britain, p. 11, and 12.

[‡] The advantage of being *broad chested*, both for men and other animals, is very great. The size of the lungs depends upon that of the chest, and the quantity of nourishment received by an animal, depends upon the size of the lungs; for, in proportion to those organs, is the quantity of blood conveyed to every part of the animal. As all the blood passes through the lungs in the course of circulation, before it can be conveyed to the different parts of the body, the animal, therefore, can receive no more of this fluid than the capacity of the lungs is capable of transmitting. An animal that has lungs one-tenth part larger than the lungs of another animal, must have one-tenth more blood distributed through the body at each complete circulation, which consequently, must make a material difference in the quantity of nourishment with which that animal is supplied. This is the opinion of that respectable surgeon, Mr. Cline, and seems to be confirmed by experience, as the broadest chested men are always the strongest; and in regard to animals, those which have the broadest chests uniformly get the soonest fat, from the greater quantity of nourishment they receive.

3. *Moist Climates.*—Damp or moist air, when accompanied with great heat, or great cold, is peculiarly unfavourable to the human species. To any person who has witnessed the thick fogs which frequently take place in London and in Paris, (so thick, that light can hardly penetrate them, and sounds are heard indistinctly), it must be a matter of astonishment, that they do not prove more injurious to health than is generally the case; which is in a great measure owing to their being accompanied with cold, and not with heat. Such weather is peculiarly injurious to the eyes, to the throat, and the breast; and if the custom of smoking tobacco, and the moderate use of spirituous liquors, are at all to be justified, it is in such weather, where the fogs are accompanied with cold. But, in general, the best cure for the disorders of a moist climate, is to improve the country; and the effects thereof are very ably described in a communication from a very intelligent correspondent, (Dr. Kirkland), who had resided for about 30 years in that district of country called the Hundreds of Essex, which were so unhealthy, that hardly any stranger would venture into them. But the state of matters is now happily altered. Owing to the various improvements which have been made in its agriculture, more especially by laying the fields open and dry, the country has assumed a different appearance; the inhabitants now breathe in a different atmosphere; and are not only less subject to the ague, but that disease has become more tractable; and thus, enjoying better health, they have lost in a great measure that emaciated and jaundiced look, which formerly constituted the characteristic of the inhabitants*.

Another district in England, (the Isle of Ely), was greatly improved in healthiness, by its being cleared of moisture.

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* See communication from Dr. Kirkland, Code of Health, 2d edit. vol. ii. Appendix, p. 214. The idea of moist climates being dangerous, may, however, be carried too far. On this subject, the late learned and respectable Dr. Percival states, that in Lancashire, October, November, and December, are generally very healthy, although the most rainy months in the year. Tables proving this fact, may be seen in his Essays, Medical, Philosophical, and Experimental, vol. ii. p. 24, edition 4th. Ireland also, though a moist, is a healthy country.

Before it was drained, the births were to the burials as 61 to 70; but now they are as 60 to 54.

4. *Dry Climates.*—Dry air, when carried to an excess, is prejudicial to health, from the immoderate perspiration which it necessarily occasions*. It leaves the body dry, and the blood full of saline particles, and disposes the body to inflammatory diseases. In such circumstances, we should be careful to avoid eating or drinking any article that contains the least quantity of salt. Spinage, lettuce, melons, and other substances of a cooling nature, are the best kinds of food; and water, or milk, or weak wines, ought to be preferred for drinking.

5. *A Light Atmosphere.*—Light air, such as that which is found on the top of high mountains, is hardly fit for respiration, though, by custom, perhaps, less inconvenience may be found from it. Many persons have suffered from their attempts to ascend lofty mountains; and almost all of them have experienced a shortness of breathing. A plan has been recommended for preventing the inconveniences attending such excursions. It appears, by a letter from Dr. Hoppe, a foreigner, who, in August 1810, ascended one of the highest mountains in Europe, that such of the party as had taken the precaution of guarding the face by crape, were exempted from a variety of sufferings which the rest experienced. Dr. Beddoes, therefore, imagines, that some defence of a similar nature, would always be serviceable in such excursions, and might be of use to invalids in other cases, in particular, those who are oppressed with what he calls the catarrh, or cough of old age, or debility†.

6. *A Heavy Atmosphere.*—Heavy air, such as that usually found on the surface of champaign countries possessed of a dry soil, and not incommoded by woods or stagnant waters, is peculiarly well calculated for the human frame, provided it is not too dense. The men in such countries are stronger, and more capable of fatigue and labour, though not so light and active as the mountaineers, who breathe a thinner atmosphere.

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* Dry air, when not carried to excess, is found not unfavourable to health; on the contrary, persons run a great risk who, having been brought up and accustomed to a clear dry air, remove to fenny, wet, and sickly soils; for people born in, and inured to, a moist air, bear it much better, and find less sensible inconvenience from it, than such as have been bred and familiarized to a good one.

† See Hygeia, or Essays Moral and Medical, by Thomas Beddoes, M. D. vol. ii. p. 86.

In countries remote from the sea, the ingredients of the atmosphere must depend very much upon the nature of the soil; and where that is favourable, the air must necessarily be wholesome; more especially if the country is properly cultivated, cleared of woods, and if it has many running streams in it, by which impure air is absorbed.

7. *Sea Air.*—In regard to sea or maritime air, Dr. Franklin has remarked, that St. Helena, Bermuda, and other islands far from continents, surrounded with rocks, against which the waves continually dashing, fill the air with spray and vapour; and as no wind can arise, that does not pass over much sea, and of course, bring with it much saline moisture, without any putrified mixture, such places are remarkably healthy.

Some authors, however, have denied the wholesomeness of air *at sea;* and, indeed, before the discoveries of the celebrated Cook, the scurvy was the bane of all sailors who attempted distant voyages. He saw the mischief, thought he could find out the remedy, and he fortunately accomplished what he intended. An abstract of his system will be found in a subsequent part of this work, (Part II. c. 3), not only from its importance to this, and to all other maritime countries; but also as it may furnish hints, by means of which the health even of persons at land may be preserved. Indeed if any circumstance can convince the thoughtless and the ignorant, of the advantage to be derived by rules for the preservation of health, it is from the benefit which has resulted to seafaring people, by the adoption of Cook's system; for, prior to the discoveries made by that truly great man, the life of a sailor was extremely hazardous, not only from the dangers of shipwreck, but from the certainty of his being subject to scorbutic and other complaints, which, since his time, have been no longer so fatal*.

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* There are several good treatises on the diseases of seamen, and the means of preserving their health: in particular, *Medicina Nautica*, by Thomas Trotter, M. D. printed in 3 vols. 8vo. There is also a valuable essay on the diseases incident to Indian seamen, or Lascars, in long voyages, by William Hunter, A. M. printed at Calcutta, *anno* 1804. See also Wainwright on Health, p. 109.

3. *Rules connected with the Age and Condition of the Individual.*

It remains to explain those rules which ought to be adopted, as connected with respiration and purity of air, during, 1. Infancy; 2. Youth; 3. Manhood; 4. Sickness; and, 5. Old Age.

1. *Infancy.*—Infants, by their pliant and tender fibres, are more sensible of the impressions of air than adults; but, as they must afterwards endure them, they ought to be gradually made hardy by all safe means. Such as have been inured to the injuries of the outward air, and accustomed to a great simplicity of diet, are no more sensible of the injuries of outward air than cattle are found to be. Dr. Arbuthnot states his having known some remarkable instances of the truth of this observation[*].

The air of cities is unfriendly to infants and children. The health of every animal is promoted by fresh and pure air; the tolerance of corrupted air, (as that of cities), is the effect of habit, which young animals have not yet acquired. The great mortality of children under two years of age, in London, was not entirely owing to the small care of the brood of the necessitous, and of natural children, but to the want of fresh air[†]; for, in the new streets, where the air is better, the mortality among the children is much less, than in the old parts of the city.

To cover children's faces when they are asleep, is a very bad custom, for they are thereby deprived of fresh air[‡].

2. *Youth.*—The lungs of young people in the prime of their age, are very tender; and, being in immediate contact with outward air, may be variously affected with its contents and qualities. The choice of air, therefore, is of great importance to those who have any tendency to pulmonic complaints. In those of a more advanced age, the lungs are less tender[§].

It is particularly necessary to attend to the air breathed by young people in school-rooms and nurseries. Such apartments ought not only to be spacious, but well ventilated, which is seldom so much attended to in boarding-schools, as it ought to be. Even in private families, greater care is necessary, more especially as servants in general, both from habit and prejudice, are fond of warm and close apartments *.

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[*] Arbuthnot on Air, p. 210.

[†] Arbuthnot on Air, p. 208.

[‡] Faust's Catechism, p. 45. In Germany, the children are too often entirely covered up when asleep. In this country, the cradle-cover might often be removed with advantage.

[§] Arbuthnot on Air, p. 215.

It is considered to be an error of no small consequence in the modern system of education, that we generally endeavour to habituate our children to the support of cold weather only; whereas a constitution, properly hardened, ought to be inured to a great degree of heat as well as of cold. Hence children ought to be slowly and gradually accustomed to bear the inconveniences arising from extreme heat, which occur frequently, and are more dangerous than those arising from sudden transitions to a colder temperature; for the effects of the latter may, in a great measure, be obviated by warmer clothing, or by exercise and muscular action.

3. *Manhood.*—There is nothing more essential for a person in health, than to breathe the fresh air at least once a-day†. The inhabitants of a town or city, in particular, ought to suffer no day to pass over, without enjoying the pure open air beyond their boundaries. A walk or a ride for that purpose, ought to be considered, not merely as the means of exercise, but of special importance, for procuring the enjoyment of the purest vital nourishment, which, above all, is indispensibly necessary to those who are much confined to their apartments. By such daily enjoyment, people become inured to a free atmosphere; and are thus secured against one of the greatest evils which at present afflicts mankind, namely, too much sensibility in regard to all the impressions and variations of the weather. This evil is one of the most abundant sources of disease; and

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* Adair's Medical Cautions, p. 52.

† Every person, whose manner of life demands, and whose constitution can bear it, ought to inure himself to the outward air in several sorts of weather.—*Arbuthnot on Air*, p. 206.—Dr. Willich also, in his Lectures on Diet and Regimen, p. 217, observes, that it is particularly necessary, frequently to expose ourselves to the changes of temperature which are so common in this variable climate. The cold will then neither feel unpleasant, nor impede the necessary perspiration, more especially if we are clothed properly, and take sufficient bodily exercise. Dr. Short (Observations on Bills of Mortality, p. 64), says, that the consideration of registers proves, how beneficial it is to inure our bodies to cold, and various sorts of weather.

there is no other mode of counteracting it, but to harden one's self, by daily exposure to the open air*.

This custom, also, will be of infinite advantage in regard to the eyes, as it is certainly a great cause of weakness in our sight, that we are accustomed so much from our infancy, to live within four walls, by which the eyes at length lose their whole power of seeing objects distinctly. Hence, those who are the most accustomed to the open air, have in general the best eyes.

In walking for health, we should neither go abroad too late, nor too early. Before the rising of the sun the air is not so good, being then infested with noxious vapours, until its influence dispels them, and purifies the air; but, in fine summer weather, the morning air is wholesome, and breathing it, is much more pleasant and healthy than lying in bed†.

One of the greatest risks run during youth and manhood, arises from an unguarded practice of rushing from heated rooms into cold air; the difference being, in frosty weather, often from 50 to 60 degrees‡. Many have suffered even where they take the greatest precautions; but where this is done without any precaution, the consequences are often fatal.

4. *Sickness.*—Nothing could be more absurd, than the old mode of keeping out fresh air from entering the apartments of persons in sickness, or in a convalescent state, and for that purpose, carefully and anxiously stopping the smallest crevice by which it could be admitted.

Arbuthnot properly remarks, that innumerable mischiefs arise from keeping the air of the room of a feverish person too hot, and by depriving the patient of the benefit of refrigeration by cool air, when it is well known, by experience, that patients in fevers, are anxious to breathe cool air, and will use their utmost efforts to come at it, by getting out of bed, &c. As the air in sick chambers must be rendered impure by the bad effects of animal steams, &c. every safe means ought to be taken, to renew the air in a patient's room, giving it a free admission, by opening the door, the bed-curtains, and, in some cases, the windows, or letting it in by pipes, changing the atmosphere, without, at the same time, checking a due quantity of perspiration. The right management of the air is, in general, one of the chief branches of regimen in all inflammatory distempers; and by the scrupulous care of ignorant nurses, in preventing the admission of fresh air, the disease is often increased, lengthened, and may ultimately prove fatal*.

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* Dr. Garnett properly remarks, that going a short time to breathe the pure air of the country, every day, is much more effectual than spending whole days, or even weeks, in the country, and then returning into the corrupt atmosphere of the town, and residing constantly in it.

† Mainwaring on Health, p. 42.

‡ Adair's Medical Cautions, p. 58.

If fresh air be necessary for those in health, it is still more so for the sick, who often lose their lives for want of it. The notion that sick people must be kept very hot, is so common, that one can hardly enter the chamber where a patient lies, without being ready to faint by reason of the hot suffocating smell. How this must affect the sick, any one may judge; no medicine is so beneficial to them as fresh air. It is the most reviving of all cordials, if it be administered with prudence. We are not, however, to throw open doors and windows at random upon the sick: Fresh air is to be let into the chamber gradually; and, if possible, by the windows of some other apartment.

There was a sect of physicians at Rome, known under the name of *Methodists*, who thought that the air we breathe is of more, or at least of as much, importance, as our food, and were particularly careful to accommodate that air to the state of their patients. For that purpose, they made use of large or small apartments, as they occasionally required. In fever, and inflammatory disorders, they not only carried their patients to apartments turned to the north, which the sun seldom visited, but sent them to grottoes, and places under ground, and even sprinkled the floor with cold water, when coolness of air was particularly necessary. When warmth was required, the apartments fixed upon were those which fronted the south, and were warmed by fires, and steams of aromatics. Even in modern times, the celebrated Boerhaave has recommended these practices in similar cases[*].

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* See Arbuthnot on Air, p. 54. Also Curteis's Essay on the Preservation of Health, 206, 207, &c. who loudly reprobates that killing with kindness, proceeding from a tender concern for the patient's safety, which shuts up every minute crevice, as if the neighbouring air were pestilential; and further, depraves what the narrow enclosure affords, both by a constant plentiful fire, and the united breath of not a few compassionate visitants.

The improved practice of medicine in modern times, in regard to fevers, is to throw up all the windows, and to remove the curtains from the beds. In the fever ward of the Edinburgh Infirmary, and in some of the other hospitals, there is an ingenious contrivance, by which a constant current of cold air is made to strike against the roof of the ward. This is done by a board fitted in a groove in each window-shutter, in such a manner, that when the upper sash is pulled down, the air that is allowed to come in at the window, passes along the board, which is placed at an angle of 45 degrees with the window; and any draught of air on the patient, is prevented. This plan would be of use in public offices, in counting-houses, at banks, &c. where, from the confinement of persons to a desk, purity of air is of such essential consequence.

It is to be hoped, that, in the present improved state of chemistry and of medicine, some useful discoveries will be made, in the art of improving the atmosphere of sick chambers. Some have proposed fumigations for that purpose, by artificial fires of rosemary, juniper, laurel, cypress; and perfumes made of aloes-wood, juniper-berries, and other aromatics[†]; but the effects of any thing that loads the air with vapours, when a person is in a weak and sickly state, must be doubtful. The steams of vinegar are certainly refreshing; and, in the opinion of a respectable physician, the steams of aromatic vinegar may be introduced into every sick chamber with great advantage[‡]. Others have proposed warming a room by steam; but the moisture there is an objection, by which the body might be softened and relaxed, and too violent a perspiration excited. Perhaps pipes, heated by steam, might be so contrived as to obviate these objections.

The last suggestion that has been made for improving the air in sick chambers, is by means of a machine, that would constantly keep in agitation a considerable quantity of water, which might be made on the principle of a shower-bath. Cold water has certainly a great tendency to purify the air, more especially when agitated; nor can any thing be more refreshing or animating, than the air in the neighbourhood of a waterfall. If lime-water were made use of, it would imbibe the fixed air, or carbonic acid gas, besides cooling the apartment. This plan might be adopted, in cases where the modern practice of bathing in cold water for feverish complaints, could not be ventured on. The latter is certainly the most effectual, acting on the whole surface of the body; but the other might be of great service, as the cool air might be taken in by the lungs [*].

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[*] Burton's Treatise on the Non-naturals, p. 91, 92. Boerhaave, Aph. de Morb. inter variis locis. Such physicians, by working on the imagination, and giving hopes, even, by an attention to trifles, might often be of singular service to their patients.

[†] Lynch's Guide to Health, p. 148.

[‡] Perhaps the best mode of using aromatic vinegar, is to deposit a few drops of it, either on linen or cotton, which will soon impregnate the air of a large room.

To these, the following miscellaneous observations may be added.

It is remarked by Dr. Adair, that many persons, who labour under chronic diseases, are distressed by an irregular fever, which, from the impure air they breathe for many hours in bed, is most troublesome in the night. He knew from experience that it is much abated, and sometimes entirely removed, by the admission of cool air; and the slumbers of the invalid become less interrupted, and much more refreshing. To such as labour under catarrhal coughs, which often terminate in consumption; to such, also, as labour under this disease in an advanced state; and to the asthmatic, this plan has been found singularly beneficial.

When a person lives in the country, and is recovering from sickness, sitting out of doors, on a piece of floor-cloth to keep out damp, and a carpet to keep the feet warm, is a most salutary practice for valetudinary or delicate people.

Dr. Cheyne recommends, that tender people, on the setting in of the easterly and northerly winds, ought to change their bed-rooms, for others of westerly and southerly exposures, and the contrary in wet seasons [†].

These suggestions may seem of little importance, more especially to persons in health; but if they be, when necessary, observed, by those who are in a sickly state, they must tend to promote their recovery: and even the occupation it furnishes to the mind, must be of service to the patient, hope being one of the most efficacious means of restoration.

5. *Old Age.*—Galen calls old age *a natural distemper* [‡]; and persons in that state, must require a different treatment from those who are young and vigorous.

Warmth is certainly essential for old age, and cold highly injurious; the circulation of their blood being already too languid, their fibres extremely stiff, and their humours sluggish, watery, glutinous, and cold.

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[*] Struve's Asthenology, translated by Johnson, p. 413. It is said, that a room hung with tapestry, or some woollen manufacture, must be wholesome, by imbibing the steams of animals, fires, and candles, and other noxious vapours; but, is there not a risk of the vapours being again emitted, if accumulated in very great quantities? Perhaps this might be one mode of improving the air of sick rooms; for screens made of cloth might be introduced, which, after they had imbibed the noxious particles in the apartment, might be taken out and ventilated.—*Arbuthnot on Air*, p. 106.

[†] Essay on Health and Long Life, p. 17.

[‡] Terence makes nearly the same observation: "Senectus ipsa est morbus."—*Phormio*, act iv. scene 1.

Experience proves how useful warmth is to aged people; for their state of health is much better in summer than in winter, and fewer of them die when the weather is fine.

Though purity of air is certainly desirable, yet it may reasonably be doubted, whether men who are advanced in years, and who have long lived in a crowded city, may not derive more injury than benefit from retiring, when they quit business, into parts of the country, where they are exposed much to bleak air, and to more cold than they have been accustomed to in London. They ought to consider, that habit is a second nature; and that even bad things, to which an old man has been long accustomed, are better than sudden and total changes.

It is impossible always to find a situation without some inconveniences; but for a person advanced in years, a warm and dry exposure, must be preferable to a damp and cold one; and in regard to soil, a gravelly one is particularly to be recommended. The best situation would be, towards the bottom of a gentle ascent; and if there be a running stream at that bottom, so much the better. In favourable seasons, old men may walk in the fields; but, for common or precarious weather, a gravel walk ought to be formed near the house, open to the south-west, and well defended from the more dangerous quarters. Let it be laid tolerably round, that the water may not lodge in it; and let it be well rolled, hard, and smooth. Such a walk must be highly useful, as a place for exercise. But any aged person should never come upon it till the dew is off the grass; and the setting sun, should be the last object he sees from it, even in the finest weather.

Some hours of the best part of each day, passed constantly on such a walk, would add many years to life; and what is much better, would give health with them.

4. *Rules connected with a place of Residence, and the formation of an Artificial Climate.*

1. *Place of Residence.*—In comparing the air of a populous city, and of an open country, it is obvious, that, in the former, there is an immense and speedy consumption of oxygen; and though it may be admitted, that much is also generated by different processes, yet it cannot be in equal proportion to what is destroyed. Besides, though we have no chemical tests for ascertaining the fact, and though it has been denied by some late philosophers,

it can hardly be doubted, that the air of cities must be contaminated by a mixture of various effluvia prejudicial to health. We know, from the miasma of marshes, that such matters can exist in the air, undiscoverable by any tests; and, from the mischievous effects of cities on delicate constitutions, it is reasonable to suppose, that they exist in the air there. It is remarked, that erysipelas is more frequent in London than elsewhere, and that people coming from the country to reside there, are frequently seized with it. People in London, also, living in very close rooms, and thence going out into a stream of cold air, are more liable to colds, than in the country. When living in a town, it is desirable, not only to live in an open situation, but where trees and shrubs are planted; for, according to the admirable arrangement in the economy of nature, those gases which are most injurious to animal life, form the nutriment of vegetables, by whose absorbing vessels they are greedily imbibed, whilst, in return, they pour from their leaves, whilst they are under the influence of the sun's rays, streams of pure air, or oxygen *.

2. *Artificial Climate.*—It may be proper here to allude, to the plan of having houses built of a peculiar construction, for the aged and the sickly, in which the air should always be preserved at nearly the same temperature. In this way an artificial climate might be procured in a northern country, capable of answering the purposes of a warmer region. We are informed by Dr. Rush, that the late Dr. Dewit of Germantown, who reached nearly an 100 years of age, after he became an old man, lived constantly in a stove-room, and seldom breathed an air below 70°. In Sweden and Russia, by means of stoves, they always keep their chambers in the same temperature, notwithstanding the severity of the climate. In Britain, on the other hand, the aged generally die in winter; and many individuals, in a weak and consumptive state, are obliged to fly to warmer climates, as the only means of safety. Might it not then be of the greatest service, both to the aged and to the consumptive, to have houses erected, of such a peculiar construction, that the air could always be preserved, not only warm, but nearly of the same, and of rather an elevated temperature; so that the invalids, who resided in them, should never be affected by the vicissitudes of the seasons? Such an idea, it must be admitted, cannot be a general remedy

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* Buchan on Sea Bathing, p. 157.

CHAP. II.

OF LIQUID FOOD.

NEXT to air, liquid food is the article the most essential for the support of life. Without it, there is scarcely an instance of any individual having existed for any length of time*, though some persons have lived long with but little solid sustenance. Indeed, though the frame of man outwardly appears to be a solid body, yet the fluids greatly exceed the solids, in point of weight. The quantity of blood and other fluids in a man, weighing 160 lib. is at least 100 lib. whilst the solids are not above 60 lib.†; and even in the solids, a considerable proportion of fluids is contained. Hence it is, that without carrying the rule to excess, we ought to take a greater proportion of liquid than of solid nourishment.

In general, however, too little attention is paid, not only to the quantity, but to the quality of our liquid diet‡. The wine we take is often adulterated, and hence becomes the source of disease. Our malt liquors are frequently mixed with unwholesome ingredients, or improperly fermented; and our ardent spirits rendered more destructive to health than otherwise they would be, by bad materials, and too rapid distillation. Yet the liquid part of our food goes into our finer vessels, the purity and salubrity of whose contents, are of the most essential consequence to health.

There is one circumstance which greatly tends to deteriorate our liquid food, which is, that it is much more frequently the object of taxation, than our solid diet. The consequence is, that its quality is frequently injured. The taxes upon wine tempt the smuggler, or the wine-merchant, to make it of other articles than the juice of the grape, and in various other ways to adulterate it. The high duties upon malt, and the still higher taxes on distillation, have tended materially to injure the quality, both of our malt liquor and ardent spirits. The same observation is applicable to cyder, mead, &c. The liquids taxed are generally accounted articles of luxury; and financiers seem to think they do enough, when they leave the pure element without an impost; but though water is undoubtedly the most natural, and ought always to be the most general beverage of mankind, yet other liquors, used in moderation, in many cases improve the health, and in others tend to promote the comfort, to enliven the spirits, to alleviate the cares, and to increase the social pleasures of the human race.

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* Almost the only instance known, of any person living without liquid food for any length of time, is in the case of Wood, the miller of Billericay, in Essex; but this he was enabled to do, from his eating no salt, and the great quantity of superfluous fluid he had from his immense corpulency.

† Keil's Essay on Animal Economy, p. 62.

‡ The ancients were much more attentive to this important branch of regimen, than the moderns are. See Barry's Observations on the Wines of the Ancients, where that subject is very fully and ably explained.

Having premised these general observations, we shall now proceed to consider more particularly; 1. The necessity and uses of liquid food. 2. The different kinds of liquids commonly used; and, 3. The rules to be observed, as to the consumption of liquors, in regard to time and quantity.

SECT. I. *On the Necessity and Uses of Liquid Food.*

THE following observations will, in some degree, explain, the nature and uses of liquid food.

1. If the human frame be, as Dr. Mead defines it*, a *hydraulic machine*, consisting more of fluid than of solid particles, it is evident, that liquid food is necessary to keep up that quantity of fluids which the body is constantly losing by perspiration and other means. Here nature, wise and provident in all she does, gives us notice, from time to time, of the indispensible necessity we have for additional fluid matter, by exciting that feeling or desire known under the name of *thirst*. This feeling increases according to the quantity of fluid wanted; for in fevers, and in violent exercises, where there is an extensive waste of watery particles, the thirst, or demand for fluid, increases accordingly.

2. It is also proper to observe, that, besides the saliva, and the natural juices of the stomach, (which themselves would soon be exhausted, were it not for constant supplies of fluid matter), it is also necessary to take, at every meal, a considerable quantity of liquid, for the purpose of assisting in dissolving and digesting our solid aliment. Hence those

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* Mead's Medical Works, p. 342.

who drink too little, whilst they eat much solid food, are apt to complain of indigestion.

3. The nourishing particles even of our solid food, can only be conveyed from the stomach, into all the different parts of the body, in a liquid state. A sufficient quantity of fluid, therefore, must be taken with every meal, to answer as a vehicle for so essential a purpose.

4. Without a sufficient quantity of liquor taken into the body, the blood would become too thick, the animal functions would become languid, and obstructions, and inflammation, must ensue[*].

5. There are salts constantly accumulating in the body, from the food we eat, or the air we breathe, which, if suffered to remain in the blood beyond what is necessary, must prove destructive. It is by means of the liquor we take, that these saline particles are washed away; and likewise a number of putrescent substances, the accumulation of which would be destructive[†].

6. The drink we use, tends also to promote the necessary secretions, such as the bile, and the juices of the stomach, the importance of which, to the health of the individual, cannot be questioned.

7. The liquids we take, contribute likewise to keep the body in a due state of temperature. When too warm, the violence of the heat is abated by cooling liquors, by which some part of that heat is absorbed, though these must be used in moderation, and with proper precautions. When the body is too cold, on the other hand, liquors moderately warm, are found beneficial in reviving the heat that is required.

8. The liquids we take, are not only the vehicles of the nourishment we derive from our solid sustenance, but they also furnish, in different degrees, nourishment them-

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[*] A gentleman with whom I was acquainted, who had lived freely, resolved to preserve his health by a new mode of life. He never drank any thing at dinner, but wine; took no soup, or broth or gravy, but lived principally on dry meat and dry toast. He took some glasses of wine also after dinner, and died in the prime of life, of an inflammation, which his mode of living had contributed to produce, and which prevented the only remedy that could have saved him, that of bleeding, owing to the scorbutic state of his blood.

[†] People, in general, seldom consider how much we are indebted to urine for the health and purity of our bodies. Were the saline and putrid substances, of which, by urine, our bodies are constantly freed, accumulated but for one week, the consequence would be fatal. When the body is in a diseased state, the urine clears away still greater quantities of these impurities, and the secretion thereof ought to be promoted.

selves. Even water is found to be nutritious*, more especially if it contains calcareous matter. Milk is certainly very nourishing; and wine and malt liquors have that quality to a considerable extent.

9. In the last place, our liquid food tends, more than our solid, to stimulate the languid powers, to enliven the spirits, and to cheer the heart. When the body is exhausted by fatigue, how refreshing is a single draught of a wholesome beverage! When the mind is borne down with care, how rapidly is it exhilarated by a cheerful glass! And, when the whole frame labours under the pressure of disease, there is no medicine so likely, in certain cases, to restore it to its former health and strength, as the genuine juice of the grape.

Nothing, therefore, can be more salutary to the human frame, than liquid food, if the quality is good, and if it is used in moderation; nor more destructive, when mingled with improper substances, or carried to excess.

SECT. II. *The different Kinds of Liquid Food commonly used.*

THE liquors commonly used, are of four different sorts: 1. Simple fluids. 2. Those which are compounded with water, but unfermented. 3. Fermented liquors; and, 4. Distilled or ardent spirits. Each of these will require separate consideration.

1. *The simple Fluids.*—There are two simple fluids used as food: 1. Water; and, 2. Milk.

1. *Water.*

Water, in its common state of purity, (for by distillation it can be rendered more pure), is a fluid perfectly clear and transparent, without colour or smell, possessed of little elasticity, and only, in a very small degree, compressible. It is usually united to atmospheric air, and to carbonic acid gas. If deprived of those two substances, (which is the case when water is recently boiled), it becomes vapid; for to them it owes what may be called its taste. To their presence, also, many of those beneficial effects which it produces, both on animals and vegetables, ought to be attributed[*].

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* See an interesting experiment, from Cheyne's Essay on Health, mentioned in Part II. Chap. V. Sect. 2, note.

Water, though apparently a simple fluid, is composed of two gases, oxygen and hydrogen; about six parts of the former to one of the latter.

The following signs of good and bad water are extracted from Vitruvius, and other authors who have entered into that investigation[†].

Signs of good Water.—1. It may be inferred, from the vigour and florid looks of the inhabitants, and from the healthiness of the animals living in the neighbourhood, that the waters they use are good in quality. 2. Also when a few drops of salubrious water are let fall on good copper, and they occasion no spot thereon. 3. Good water is found fit for boiling vegetables quickly, in particular, pease, beans, and other pulse. 4. Good waters are light; and perhaps lightness of water is the most positive token of its goodness, and its exemption from other ingredients. 5. Those waters which dissolve soap in the completest manner, are generally excellent. 6. Springs issuing from sandy soils, sandstone, gravel, and redstone, are usually wholesome. 7. Good water is soft, and totally free from smell. 8. Good water easily acquires the taste, colour, and flavour that is wished to be given to it. 9. Springs which freeze with difficulty, and suffer little variation in their temperature, at different seasons of the year, are deemed good. 10. Water of good quality soon grows warm by the heat of the fire, and soon cools when exposed to the air. 11. It is reckoned a good sign of river-water, when fresh verdure is observed along the banks where it runs. 12. Waters are good which produce water-cresses and water-marigolds. 13. If fresh waters rather abound with fish, in particular, if the fish appear healthy, and are found well tasted, it indicates, that the water which they inhabit may be used in diet.

Signs of bad Water.—1. Where the people are pale and unhealthy; and, in particular where they are troubled with swellings in the throat. 2. Where the water, in a boiling state, will not soften pease and beans, and other pulse. 3. Where it has ferruginous or vitriolic qualities. 4. In general, waters which issue from peat-mosses. 5. Where they have a petrifying quality, or are much impregnated with calcareous earth: And, 6. Where they are full of saline or sulphureous particles. Indeed, mineral waters are not proper as common diluents, though useful as medicine.

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[*] Thomson's System of Chemistry, vol. iii. p. 427. Mr. Henry found that 100 cubic inches of spring water contained 3.38 inches of carbonic acid, and 1.38 of atmospheric air.

[†] In particular, a work entitled, De L'Eau, relativement à l'Economie Rustique, par M. Bertrand, &c. Lyon, 1764.

It has been disputed, whether what is called *hard water*, or the sort which has some acid, or calcareous matter in solution, and which is unfit for being used with soap*, can with safety be taken as drink.

There are probably few, who would not give a preference to soft, over hard water, for general use; at the same time, the authorities in favour of hard water, and the proofs adduced in its behalf, are so very satisfactory, that persons who have no other water to which they can easily have access, need not, on that account, entertain any apprehensions of danger from using it†.

Water may be divided into two kinds, *Common* and *Mineral*.

By common water, naturalists understand that which has no perceptible distinguishing taste or smell, and which exerts no particular or sensible effect on the human body, when internally taken. Such water is peculiarly well calculated for diet.

Mineral waters, on the other hand, have properties directly contrary, and as they are never, except from necessity, used as aliment, they do not come within the scope of the present enquiry.

Common waters may be considered under the following general heads: 1. Rain. 2. Snow. 3. Hail. 4. Ice. 5. Spring. 6. Well. 7. River. 8. Lake. 9. Marsh; and, 10. Pond water; to which will be added, some observations on the rendering sea-water fit for being used in diet.

1. *Rain-water.*—In favourable circumstances, at a distance from the smoke of cities or towns, rain-water ought to be as free from foreign ingredients, as any that has not undergone the process of distillation. But when there are heterogeneous particles in the atmosphere, the rain must imbibe them.

To obtain rain-water in its greatest purity, it should, as Neumann directs, be collected either on the tops of mountains, or in open plains, and not when the rain begins, but after a considerable quantity has fallen. The winter, or very early in the spring, is esteemed the best season of the year for obtaining pure rain-water. The rain, also, which falls after a long tract of wet weather, must be pure, for the atmosphere is then, in some measure, *washed*, if that expression may be made use of, from all extraneous substances. When collected in this manner, boiling is unnecessary, with a view to purify it.

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* When soap is put into such water, its alkali is immediately attracted by the acid of the water, the soap is decomposed, and the oil of it swims on the surface of the water.—*Encycloped. Brit.* vol. xviii. p. 811.

† Cullen, in his Materia Medica; Darwin in his Zoonomia; Saunders in his Treatise on Mineral Waters; and Peacock, in his Observations on the Sulphur Baths at Dinsdale, in the county of Durham, are all of that opinion.

2. *Snow-water.*—In certain cold climates, and in high latitudes, thawed snow forms the constant drink of the inhabitants during the winter season. In the Alps, where this is necessarily the case, many of the inhabitants are deformed with swellings in the neck, which have been often imputed to the use of snow-water; but it is now ascertained, that such swellings are owing to the *Tufa*, a volcanic substance. Indeed, the same disease is frequent in Sumatra, where ice and snow are never seen, and quite unknown in Chili and Thibet, though the rivers of these countries are chiefly supplied by the melting of the snow, with which the mountains are covered. When immediately melted, snow-water contains no air, as that substance is expelled during freezing, consequently, it is remarkably vapid, but it soon recovers the air it had lost, by exposure to the atmosphere[*]. If made from snow that falls in calm weather, it is the purest of any, next to distilled water, and will keep good for many years. It will also dissolve soap better, and will sooner boil and cool again, than almost any other[†].

3. *Hail-water.*—Among the various sorts of water, that from melted hail ought to be peculiarly pure; for the lightest parts of water ascend to the highest regions, and are there congealed, (without any kind of mixture with other particles), into one homogeneous substance, and put into a form, which cannot easily partake of impurities in its descent[‡].

4. *Ice-water.*—Ice may either be formed from fresh or salt water. As to the first, we find it placed by Celsus,

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[*] From its want of air, no fish can live in snow-water, until it has been exposed to the atmosphere.

[†] Burton's Treatise on the Non-Naturals, p. 238. Barry, in his Observations on the Wines of the Ancients, p. 392, states, that from experiments which have been made on water, collected from the purest snow dissolved on the highest mountains, and the best common water, it appears, that the former possessed several peculiar qualities, which must render it more salutary as a beverage.

[‡] Burton's Treatises on the Non-Naturals, p. 237.—Also, Willich's Lectures on Diet, &c. p. 392.

in the fifth rank in regard to wholesomeness, or after rain, spring, river, and well-water [*]. As to the second sort, in a work written many years ago, by a Danish author, (Bartholinus, de nivis usu), it is stated, that if the ice of sea-water be thawed, it is found to have no saltness, which was ascertained by a professor in the University of Copenhagen; and a British writer, whose work was published in the year 1738, takes notice of that circumstance, and adds, that thawed ice, from sea-water, is often used at Amsterdam for brewing [†].

5. *Spring-water.*—Under this general head are comprehended, all those waters that arise from any depth to the surface of the earth, and are used, either at the fountain-head, where they spring, or at least before they have mixed with other waters. These certainly ought to be as pure as rain-water, from which they generally originate, being in a manner filtrated in the earth, if it were not, that in their passage through the soil, they meet with various soluble bodies, and hence are impregnated with mineral and other particles. The best are such as flow from gravel or fine white sand. Springs in a clay soil generally produce hard water, unfit for several uses.

6. *Well-water.*—Where springs are not to be met with, it is often necessary to dig deep pits into the bowels of the earth, for the purpose of finding water; and where the quantity is not sufficient to overflow the mouth of the well, pumps and other means are used for the purpose of raising the water to the surface. Well, or pump water, must greatly resemble spring-water, being derived from the same source; but it is more liable to be impregnated with foreign ingredients, in consequence of its stagnation and slow filtration; hence, the more frequently that the well is used the better. The water of wells not in sandy or gravelly soils, has often the advantage of containing a greater quantity of fixed air, or carbonic acid gas [‡]. In some places, they have dug wells

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[*] Grieve's Celsus, p. 97.

[†] Burton's Treatise on the Non-Naturals, p. 238. Sir John Pringle, therefore, in his discourse on some late improvements upon the means of preserving the health of mariners, p. 34, was mistaken in supposing, that the celebrated Cook was the first who discovered that frozen sea-water thawed into fresh. The fact is, that the salt does not freeze, the frost only affecting the fresh particles of salt-water.

[‡] Thomson's System of Chemistry, vol. iii. p. 429. There are many useful works on well, or pump-water, as Heberden's Observations on the pump-water of London, (Medical Transactions, vol. i.); Percival's on that of Manchester; and Falconer's on that of Bath. Dr. Heberden asserts, that most of the pump-waters used in London contain lime, and the three mineral acids of vitriol, nitre, and sea-salt, besides an oiliness, which discolours them, and gives them a remarkably yellowish cast, when compared with

to no less a depth than 500 feet, and been amply repaid for the trouble and expence, by the purity of water thus attained. In consequence of a well having been sunk to nearly the depth above mentioned, and good water procured, the inhabitants of the parish of Steeple, in Dengy hundred, Essex, derived the greatest benefit to their health.

7. *River-water.*—There are certainly some objections to the water of rivers, from the impurities of the springs, or other fluids of which the water is composed, and from the substances thrown into it; yet, on the whole, there is no water better calculated for general use. Indeed, where their motion is rapid, and their bed either gravel or silicious sand, they are said to be purer than even spring-water, depositing every thing during their course, which was merely mechanically supended. Some rivers, however, like the Thames, in passing through rich and cultivated plains, or populous towns and cities, become considerably charged with foreign matter. Such water is easily improved by filtration; or when left to settle, will become as clear as spring-water. Hence, the water of the Thames is preferred for long voyages even to spring-water*.

8. *Lake-water.*—The water of lakes is merely a collection of rain and snow water, spring-water, and river-water, and of course must be impregnated with the same heterogeneous substances which they contain. It is seldom so transparent as river-water; but as the water of lakes is not so much agitated as that of rivers, any noxious substances frequently subside to the bottom, and do not injure the surface. An excellent mode of filtration is adopted by those who live on the borders of Loch Lomond, the largest and most beautiful lake in Scotland. Instead of taking it from the lake itself, they make a pit or hollow in any bank of gravel on its margin, into which the water naturally flows, cleared from any injurious particles.

pure distilled water. They are also liable to be tainted, in their passage under ground, by various inpurities, so frequent in the neighbourhood of so large a city. The nitrous acid in these waters makes the flesh boiled in them to become red. The tea and coffee infused in them are not palatable; and several physicians suspect, that they occasion many disorders, more especially among the infirm and children. There is also a work on pump-water, recently published by Dr. Lambe, which merits attention, though he seems to carry his apprehensions, regarding the unwholesomeness of pump-water, much too far.

* See Thomson's System of Chemistry, vol. iii. p. 428. Hooper's Lexicon, &c. Dr. Heberden states, that if two or three grains of alum are dissolved in a quart of thick river water, it makes the dirt very soon collect, and slowly to precipitate: If then filtrated, it is immediately prepared for use.

9. *Marsh-water.*—Marshes are shallow lakes, and the water they contain is generally unwholesome, containing a greater proportion than any other, of animal and vegetable matter, and sometimes in a putrid state. Such water ought to be improved by boiling and filtration.

10. *Pond-water, &c.*—From the want of springs, lakes, or rivers, the inhabitants of some countries are often under the necessity of collecting rain-water in ponds and ditches, as the only means of supplying themselves with so essential an article. Such water being rarely good, ought to be boiled and strained before it is made use of.

11. *Sea-water freshened.*—The only other means of procuring water for diet, is, by rendering salt water fresh. The most effectual mode of accomplishing this is by distillation, which has been carried to such perfection, that parliament very liberally rewarded the person by whom this process was principally improved.

It may next be proper to consider, 1. The means of conveying water from any distance. 2. The means of preserving it for use. 3. The different modes of improving it; and, 4. The arguments which are commonly made use of in recommendation of this useful beverage.

1. *Mode of Conveyance.*—It is in vain that pure water is discovered in the neighbourhood of any town or city, if proper means be not adopted to convey it for the use of the inhabitants. In ancient times, this was done by means of aqueducts, at a very great expence: but since the principle has been ascertained, that water will rise to its original level, such stupendous works are no longer necessary. As water must be affected by the materials of the reservoirs, or cisterns in which it is kept, and the pipes through which it flows, it is remarkable, that lead should be so much employed for those purposes, after the deleterious qualities of that metal have been known. Pipes made of clay or brick earth are far preferable to leaden ones. Timber pipes are liable to decay, and apt to give a bad taste to the water, unless when they are charred. On the whole, pipes made of cast-iron are to be preferred, on account of their durability.

2. *Mode of Preserving Water.*—This is a subject of material consequence, in a view to health. The usual mode of preserving water in cisterns of lead, cannot be too strongly reprobated*. There are some objections even to the use of wood†. Freestone or marble would certainly be preferable.

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* See Manual of Health, p. 352, 354, &c.

† Ditto, p. 360.

There is an excellent mode of preserving water, and by which it is filtrated at the same time, adopted at Paris. The water is put into what is called a *fountain*, which is a large and strong earthen jar, about four feet in height, placed on a wooden pedestal. At the bottom, there is gravel to the height of six or eight inches, which should be cleared once a year, or oftener if necessary. The fountain may be had for a Louis-d'or; and the waterman receives a trifle for filling it twice a week, which is sufficient for the generality of families. The water, thus filtrated through the gravel, becomes as pure as crystal, and is drawn by a cock, at the bottom of the fountain. As the water of the Seine is rarely pure, and in a dry summer even noxious, such a machine is very convenient, and even indispensible. It is not liable to the many accidents, and constant wear, of our filtering stones, nor does it require the attention of those with charcoal, recently invented at Paris*.

Another mode of preserving water in distant voyages, is, by charring the vessels in which it is preserved. This is taken notice of in a recent French publication†, but has long been practised in England, and is no new discovery.

3. *Mode of Improving Water.*—There are six modes by which water, without infusing any article to be retained it it, may be improved; namely, by, 1. Boiling. 2. Cooling. 3. Distilling. 4. Filtrating. 5. Charcoal: and, 6. Machinery.

1. Wherever there is any reason to doubt the purity of water, or to apprehend that it may be impregnated with noxious ingredients, there is no mode by which it can be so easily improved, as by the simple operation of boiling, more especially if it is afterwards strained or filtrated, and then suffered to cool. In ancient times, public buildings were erected for that purpose, where the boiled water was sold, both for drinking by itself, or mixing it with wine‡. In China, water used in diet, is always boiled§.

Boiling hard or pump water, however, is not alone found to be sufficient; for though boiling makes it to part with the earthy matters which were dissolved in it, yet it becomes more strongly impregnated with the saline substances which it contains, and, in that respect, it will become worse. But if, besides boiling, 10 or 15 grains of any alkaline salt, to each pint of water, are boiled with it, all the noxious qualities of pump water, according to Heberden, would either be precipitated to the bottom, or rendered innocent.

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* Pinkerton's Recollections of Paris, vol. i. p. 521.

† Annales de Chymie, July, 1806, tome 95.

‡ See Barry's Observations on the Wines of the Ancients, p. 156, and 160.

§ Barrow's Travels in China, p. 547.

2. After the ancients boiled the water, they were accustomed to cool it, by immersing the vessel containing it in snow or ice. This was practised by Alexander in his Indian expedition, and is recommended by Galen[*].

3. The nature of distillation is now generally known. It is thus that ardent spirits are made: and if the steam or vapour that arises from water, when in a boiling state, is collected by proper instruments, the water which is thus produced, is purer than any other, and so uniform, in regard to that essential quality, lightness, as to become a standard for weight.

Distilled water, on account of the trouble of procuring it in large quantities, is seldom employed to any extent, either in the preparation of food, or as drink[†]; but for preparing a great number of medicines, and in a great variety of chemical processes, this species of water is an essential requisite[‡]. And Heberden is of opinion, that a course of distilled water might be as beneficial, in many chronical pains of the stomach and bowels, as the most celebrated mineral waters are in other disorders; and hence, that it might prove no inconsiderable addition to the Materia Medica.

Some instances are given, of persons having used distilled water as their common drink, who are said to have found benefit from it[§]; and by condensing the steam of salt water, it has been obtained at sea in considerable quantities. It acquires, however, a bad taste from the still[*]; and if any vegetable essential oil was in the water when boiled, it will remain in it after a single distillation. It loses also, in a great measure, both its atmospheric and fixed air; and hence becomes extremely vapid. On the whole, from the trouble and expence attending this preparation of water, and the other objections above alluded to, there is very little chance of its ever coming into general use. At the same time, the sentiments of the judicious Heberden are entitled to attention, who recommends distilled water to be used in any of our foreign possessions, where the waters are found to be very injurious to health.

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[*] Meth. Med. Lib. vii. cap. 4. When first boiled, and then cooled with snow, it was called decocta. Juvenal, in Sat. v. V. 50, celebrates this mode of cooling water; and Martial, Lib. iv. Ep. 116, distinguishes this water by the appropriate name of *nobile frigus*.

[†] If by boiling water, as Wainwright, in his Mechanical Account of the Non-Naturals, p. 211, contends, the best part of the liquid is evaporated, that is certainly in favour of distilled water as a diluent.

[‡] Quincy's "Lexicon Medicum," by Hooper, *voce* Water. Also Heberden on Water, "Medical Transactions," vol. i. p. 16. There are several medicines, which cannot with propriety, be made with any other than distilled water.

[§] Tournefort mentions one Francis Secardi Horgo, who made distilled water his only drink, without any addition of wine, or any strong liquor, to the last, and lived, with remarkably good health, to the age of one hundred and fifteen years.—*Heberden on Water*, p. 22.

4. The idea of filtrating water is pointed out by nature itself; for all springs arising through sand, gravel, &c. must undergo that process. Hence it occurred, that if waters of a putrid, marshy, or unwholesome nature, were filtrated through a factitious bed of sand, or a vessel made of porous stone, they might be deprived of their bad qualities[†].

Filtering stones, or reservoirs, are either small, calculated merely for the use of a single family, or on a great scale, adapted for a great town.

The smaller sorts of filtering stones, where the water passes downwards, are very apt, in process of time, to be clogged with dirt and other impurities. Filtering stones, however, have been contrived, by which the water is forced, by means of the pressure of the atmosphere, *to ascend through a stratum of sand*, instead of descending, which is a great improvement.

The process of filtrating water, may be carried on, not only for supplying single families, but also on a great scale, for the use of any number of people. At Paisley, in Scotland, this has been effected, so as to supply a town containing above 20,000 inhabitants: a similar plan has since been extended to Glasgow; and the water of every town, in every civilized country, ought to be improved in the same way[‡].

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[*] The empyreumatic, or burnt taste, in distilled waters, may be cured in various ways. 1. The first gallon, having the most of that taste, should be thrown away. 2. In a month's time, by mere keeping it in perfectly clean glass or stone bottles, thoroughly well stopped, the taste will be got rid of. 3. By ventilating the water, in the manner described by Hales, the taste will also be carried off in a few minutes: Or, 4. By boiling the distilled water in an open vessel, the burnt taste will be immediately taken off.

[†] On this subject a valuable work may be consulted, entitled, " De l'Eau, " relativement à l'Economie Rustique, par M. Bertrand," Lyon, 1764.

[‡] There is a particular detail of this improvement in the Code of Health, 2d edition, vol. i. p. 204, note.

5. Another mode of improving water, and the one that has been most recently discovered, is by means of charcoal, a substance which enjoys the property of preserving water from corruption, and of purifying it after it has been corrupted. It has been found, that one ounce and a half of powdered charcoal, and twenty-four drops of oil of vitriol, (concentrated sulphuric acid), are sufficient to purify three English pints and a half of corrupted water, without communicating to it any sensible acidity. If no acid be used, two-thirds more of charcoal powder will be necessary; but when less of that powder is employed, the less is the quantity of water lost by the operation; which, in sea-voyages, is a material object. Other acids produce nearly the same effect, and even nitre and sea-salt; but sulphuric acid is preferable. A small quantity of it should be added to the water, before the charcoal-powder is put in. If a quantity of that powder were put in the casks intended for holding water for long voyages, or if the inside of the casks were charred, it would prevent the water from putrifying. It is also found, that filtrating water through charcoal, is an excellent mode of purifying it*.

6. Water is also improved by means of machinery. It is well known, that, by pouring water from one vessel to another, it is ameliorated; and the more it is agitated and put in motion, the more it acquires the qualities to be desired†. If, therefore, it were frequently to pass through the air, by means of machinery, water that had been distilled or boiled, and thus had lost its elastic fluids, might be again impregnated with the beneficial qualities of the atmosphere. Machines, on the principles of shower-baths, might be employed, but perhaps a barrel or other churn might answer that purpose more effectually. The common mode of impregnating water with fixed air, is troublesome and expensive, and, on that account, never can come into general use. Besides, fixed air is of a very volatile nature, and not in every case desirable to be taken in large quantities; whereas, the more that water can be impregnated with atmospheric air the better‡.

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* See Encycloped. Britan. vol. xviii. p. 816.

† The Chinese have a practice of agitating the water they are to drink, for two or three minutes, with a bamboo, in the hollow of which they put a piece of alum, by means of which the earthy particles of the water are precipitated to the bottom.

‡ To impregnate water with atmospheric air, the following plan may be adopted: After the water is prepared by boiling, and the infusion of toasted

4. *On the superiority of common Water as Liquid Food, and its use as Medicine.*—We shall conclude our observation on common water, by briefly stating some of the eulogiums which have been bestowed upon it, (which is the more necessary, as water-drinking, like many other good old customs, is not so fashionable as it was), and by alluding to those medicinal properties which it is said to possess.

Pure water, in the opinion of Hoffman, is the fittest drink for persons of all ages and temperaments; and, of all the productions of nature or art, comes the nearest to that universal remedy, so much searched after by mankind, but never hitherto discovered.

Other respectable physicians assert, that in regard to diet, with a view to the preservation of heath, no one rule is of so much importance, as to avoid all sorts of compound liquors, water being the only wholesome beverage, the best solvent and diluent of the solid portions of our food; supporting the tone of the stomach, without exhausting its vigour; and furnishing the most simple, and the most suitable supply to the secretory vessels, and general humidity of the body. Hence those who use water only, as their general beverage, are, *cœteris paribus*, the most free from disease; and retain the vigour of life, and its different functions, to a more advanced age*.

It may be proper here to state, that common water is not only strongly recommended as the best of liquid food, but also, as possessing, in a very eminent degree, many

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bread, or any other article that is preferred, (if such an addition is thought necessary), let it be put into a common barrel-churn, where it may be at once subjected to any agitation which may be wished for. In the course of its being thus agitated, it will absorb atmospheric air, and the other elastic fluids with which it may come in contact. It will thus become a liquor, safe, palatable and wholesome; to be obtained with little trouble or expence; and accessible, in its utmost perfection, to the poorest individuals. To drink water in perfection, it should be boiled and filtrated, then churned and bottled with a couple of dried raisins in each bottle. This will give it fixed air. It may then be iced, to give it that *nobile frigus* so much admired by the Roman epicures.

* In the Miscellanea Curiosa, there is an account of an old man, one hundred and twenty years of age, without the loss of a tooth, and of a brisk and lively disposition, whose drink, from his infancy, was pure water. A famous civilian, likewise, Andrew Tieraqueaus, who is said, for thirty years together, to have given yearly a book, and, by one wife, a son to the world, never drank any thing but water from his infancy; and Faust, in his Catechism of Health, pointedly observes, that if water were the only drink of man, both his health and fortune would be improved.

valuable properties in the cure of disease, both by external application, and taken inwardly.

This subject was particularly discussed about the year 1724, when two authors published separate works, celebrating common water as the best means of curing fevers, and many other distempers. In these publications, there are certainly some useful hints, though they carried their doctrines too far, and relied too much upon their favourite remedy[*]. Dr. Wright and Dr. Currie have since ascertained, in the most satisfactory manner, the advantages of applying cold water in fevers.

2. *Milk.*

This is one of the most valuable presents that nature has bestowed upon the human race. It seems to partake of that just medium between animal and vegetable substances, so desirable in our diet; and whilst it possesses enough of the animal nature, to give strong and perfect nourishment to animal bodies, it contains enough of the vegetable, to prevent too strong a tendency to the alkalescent or putrid state.

It is impossible, in a work of this nature, to enter much at length into this extensive subject. It may be sufficient shortly to consider, 1. The nature of milk. 2. The different kinds of milk which are made use of in diet and medicine. 3. The various modes in which it is prepared as liquid food; and, 4. Miscellaneous rules, to be observed regarding its consumption.

1. Milk can easily be separated into three distinct substances; cream, curd, and whey; which are too well known to require any particular description. Besides these substances, chemical art and industry have discovered several others, as sugar of milk, sulphur[†], &c.

2. A variety of milks have been used in diet and medi-

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[*] See "*Febrifugium Magnum*, or Common Water the best Cure for Fevers, &c. By John Hancock, D. D." 7th edit. 8vo. 1724. Also, "The Curiosities of Common Water, &c. By John Smith, C. M." 7th edit. 8vo. 1724. Both these tracts were translated into French; and published in one volume 8vo. anno 1725. A voluminous author attempted to refute these publications in a work entitled, "A New Treatise on Liquors," &c. By James Sedgwick, apothecary, one volume 8vo. printed anno 1725. Dr. Peter Shaw also wrote a curious tract upon the subject, called "The Juice of the Grape; or, Wine preferable to Water, By a Fellow of the College." 8vo. printed anno 1724.

[†] See Thomson's System of Chemistry, vol. iii. p. 605.

cine. For infants, the milk of women is the best[*]. Of all the inferior animals, the milk of the cow is in most general use: and, if physicians and poets are to be credited, was included among the principal articles of diet, in very remote ages. Mares' milk was among the ancient Scythians, and still is with the modern Tartars, a very important part of their subsistence. The milk of the ass[†], and of the camel, and in the northern countries, that of the goat, is principally employed for medicinal purposes: but in southern climates, the goat furnishes such quantities of milk as to be used as food[‡]. Sheep give milk only in small quantities; and where the flocks of that valuable animal are properly attended to, they are never milked but for two or three days after the lambs are weaned. Formerly, the milk of swine was also in request, and considered useful in some disorders[§].

3. There are various modes in which milk may be consumed. The principal are, 1. In a raw state; 2. When boiled; 3. As sour milk; 4. As cream; 5. As butter-milk; 6. As whey; 7. As punch; and, 8. As wine.

1. *Raw Milk.*—Milk, in a raw state, ought, if possible, to be taken as it comes from the animal that produces it. There is reason to believe, that one of the principal advantages of children's sucking at the breast, arises from the circumstance of their getting the milk warm from the body of the nurse, and not tainted by the air. The atmosphere speedily makes a great change upon this delicate fluid. The

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[*] The following preparation is strongly recommended, as a proper substitute for human milk, where, from any circumstance, it cannot be procured for children. In a quart of water, boil two ounces of hartshorn shavings, over a gentle fire, till the whole is reduced to a pint; mix this with twice its quantity of cows' milk, and the addition of a little sugar. This forms, for children, a proper aliment, approaching nearly to the nature of human milk. See "Practical Synopsis of the Materia Alimentaria," p. 13.

[†] In the milk of the ass, the proportion of whey is very great, and of oil and cheesy matter very small: hence it is light, and well suited to weak stomachs. It is best in spring and summer; but it is neither so light nor salutary when the animal is supported on dry food. If taken early in the morning, from its cooling quality, it is excellent in all disorders where the patient is troubled with an insatiable thirst. Hart's "Diet of the Diseased," p. 204.

[‡] Dolæus, in his "Essay upon the Cure of the Gout," mentions, on the authority of Poterius, the story of an old woman of sixty, who, by the help of goats' milk, was restored to a state of perfect health, notwithstanding a great decay of flesh and strength, a hectic fever, and a stone. In other cases, it has been found prejudicial. See, in Moffat's "Health Improvement," p 212, the story of Lady Penruddock.

[§] Hart's "Diet of the Diseased," p. 203.

excellence of milk depends upon the admirable mixture of the three substances of which it principally consists; but, as soon as the air acts upon them, so as to separate the cream from the rest of the milk, it is no longer the same homogeneous and wholesome substance, nor can the articles of which it consists be ever again perfectly united. Where infants, therefore, are nursed on cow or other milk, it is of the greatest importance, not to suffer it to stand for any length of time; and, if possible, to give it directly from the animal, or to keep it warm, by the vessel containing it being placed over boiling water. This is always attended to, when asses' milk is given as medicine; and is probably one great cause of the good effects arising from it. With raw milk, some find the addition of sugar necessary, to prevent its curdling; and that practice is of use, when it is taken by those who have weak stomachs, or who are recovering from sickness. The preparation, called Conserve of Roses, is a delicate and palatable addition to milk fresh from the cow, when used medicinally.

2. *Boiled Milk.*—If milk has stood for some time, there is no mode by which its ingredients can be again brought into any state of union, however imperfect, compared to what it previously possessed, except by boiling. Some imagine, that when milk is boiled, and sweetened with sugar, it is more digestible than when raw, being deprived of a considerable quantity of its air, which lessens its tendency to acidity and fermentation; and Hippocrates gave boiled milk, diluted with considerable quantities of water even in mild fevers[*]. Milk, in general, is apt to induce costiveness, even in a raw state; but when boiled, it is still more apt to have that property[†].

3. *Sour Milk.*—In warm weather, sour milk is used with bread; mixed with sugar, it forms an aliment in some degree nourishing, and from its sourness, cooling[‡].

4. *Cream.*—There is no food more improper for weak

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[*] Hart's "Diet of the Diseased," p. 206.

[†] "Practical Synopsis of *Materia Alimentaria*," p. 14. To obviate these objections, raw milk is sometimes mixed with sugar and magnesia; and the boiled with oatmeal, or veal broth.

[‡] It is thus made; they put the milk, when fresh drawn, into a barrel or wooden vessel, which is submitted to a certain degree of heat, generally by immersion in warm water; this accelerates the stage of fermentation. The serous is separated from the other parts of the milk, the oleaginous and coagulable; the serum is drawn off by a hole in the lower part of the vessel; what remains is put into the plunge-churn, and after being agitated for some time, is sent to market as sour milk, or *Corstorphine Cream.*

stomachs than cream; being liable to turn rancid; very difficult of digestion; and particularly apt to disorder the bowels, when taken too freely. But to strong stomachs, which can digest it, no article is probably more nourishing.

If you propose to drink wine afterwards, it is an unwholesome custom to eat cream, or any preparation of milk, with apple-pies during dinner, or with strawberries, &c. after dinner; for the wine ferments, coagulates the cream, and makes the whole mass difficult to digest*.

In some countries, as in the western parts of England, the cream is not suffered to rise naturally, but is gathered from it, after it has been thickened upon a moderate fire; and this *scalded* or *clouted cream*, as it is called, is considered to be less offensive to the stomach, and of better nourishment, than the raw.

5. *Butter-milk.*—After the oily matter in milk is extracted by churning or agitation, there remains a substance, known under the name of butter-milk, which many consider an excellent article of diet, and of great use in colds, consumptions, and other disorders of a similar nature. Its nourishment, however, must depend on the manner in which the butter is made. When that article is manufactured from cream alone, little remains but the vapid refuse of an oily substance, which is bitter and unpleasant; but when the whole milk is employed in the process, (as is the case in Ireland), the cheesy part of the milk, in a great measure, remains with the butter-milk, and makes it more substantial food. Hence the Irish, who live so much upon butter-milk of this description, are so strong and healthy. If we drink butter-milk, while it is new and sweet, it is cooling and refreshing.

6. *Whey.*—When curds are formed for the purpose of being converted into cheese, there remains a liquid, which contains the watery and saccharine parts of milk, in a great measure freed from its oily and cheesy ingredients. This substance is in some degree nutritive, and is distinguished for its diluent and diuretic qualities. It is a great corrector of the blood, and passes off easily by the secretions of the body †. There is no drink in general more wholesome, nor

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* "Concise Observations on the Nature of our Common Food," &c. p. 31. It is known that a whole family has been colicked by drinking ale after rice and milk

† Some prefer what is called *two milk whey*, prepared by taking one part of butter milk, and two parts of new milk fresh from the cow, and boiling them together.

more palatable, more especially when it is clarified in the manner practised by the French apothecaries, who sell it, as a diluent, under the name of *petit lait*[*].

7. *Milk-wine.*—By the fermentation of mares' milk, the Tartars prepare a vinous liquor, called *koumiss*, the ardent spirit of which is derived from the sugar of milk, which is very abundant in the serous part of the milk of mares. Late experiments have shewn, that a similar spirituous liquor may be obtained from the milk of other animals. In many cases, mares' milk alone has acted as a strengthener and a restorative, and it has proved highly beneficial at the commencement of a consumption.

4. There still remains a variety of miscellaneous rules and observations on the subject of milk, of which the following are among the most important:

It is evident, that the quality of milk must depend, not only upon the species of the animal, and the nature, constitution, and age, of the individual of that species, but also upon the season of the year, the mode of feeding, the vessels in which the milk may be put, the houses in which it may be kept, and a variety of other particulars, which it is impossible here to discuss, and which are almost exclusively within the province of the farmer. It may be sufficient here to remark, that a young and healthy animal, fed on natural pasture, and who is not deprived of exercise without doors, must give the wholesomest milk.

Among the rules to be observed in regard to the consumption of milk, *as food*, it may be stated, that skimmed milk is much inferior to that article in its original state. If milk be too heavy for a weak stomach, it is much more wholesome to dilute it with water, and to mix a little sugar with it, than to skim it[†].

It is a common observation, that milk and fish ought never to be taken at the same meal; at least, that none but strong stomachs can venture upon such a mixture.

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[*] There are various modes of preparing the French *petit lait*, but the two following are the most common: 1. Take two whites of eggs, well beat, add them to four pounds of milk; make it boil, and the curdy part will separate; pour off the clear, and strain it through linen three times, the *petit lait* will then be very limpid and good. 2. To fresh whey, when cold, add the white of an egg for each pound of liquor, and mix them well by beating. Set the liquor on the fire to boil, and, during the ebullition, throw in eighteen or twenty grains of cream of tartar; then pass it through flannel, and afterwards through filtrating paper. The common whey, however, is a useful liquor after a great debauch, and is used as a restorative every morning in great families, where drinking is carried to any excess.

[†] "Concise Observations on the Nature of our Common Food," p. 29.

Some unfounded prejudices are entertained against milk, as being injurious to the teeth and to the eyes*, and the constant use of it will, it is said, bring on grey hairs prematurely. On the other hand, the use of milk has long been strongly recommended as a remedy for various disorders, in particular, the consumption and the gout.

In regard to hectic complaints, there can be no doubt, that, if it be used early, before the disease has taken any hold of the constitution, and if it be properly administered, and other judicious rules for the improvement of health attended to by the patient, it is most likely to prove effectual.

A respectable physician considers a milk-diet to be an excellent remedy for the cure of the gout merely†, if it be uncombined with other disorders; and contends, that the patient may use it *with almost a certainty of success.* He recommends that the milk should either be taken immediately from the cow, or made a little warm, by placing the vessel which contains it over boiling water. He began with smaller quantities, but afterwards went the length of twelve or fourteen ounces in the morning, twenty-four ounces, with wheaten-bread, at noon, and about twenty ounces at night, half with bread, and the other half as common drink. Some sugar, or even a little salt, may be put in the milk to prevent it from curdling, and the acid from gathering. By living in this manner, for a space of time, varying from six to eighteen months, according to the degree and duration of the distemper; the whole gouty matter is discharged from the body, and the patient may return with safety, to his former mode of living, provided the dictates of moderation and prudence are afterwards, in a proper degree, observed.

3. *Of Fluids compounded with Water, but unfermented.*

The celebrated Pliny has remarked it as a great absurdity, that mankind should bestow so much trouble and expence in making, artificially, such a variety of liquors, when nature has prepared to their hands, a drink of so superior a quality as pure water. But though the use of water is to be recommended, yet all preparations of water are not to be condemned, as either dangerous or unnecessary. In fact, though common water may be well adapted for those who take violent exercise, or are employed in laborious occupations; it may not, in every case, be equally well calculated for the sedentary and the invalid. In regard to the latter, in particular, there are various diseases and habits of body where pure water cannot be accounted salutary. The great Sydenham says, that young persons may drink it with safety; but he does not consider it to be a proper *general beverage* in gouty cases. Where a person has the gout mildly, and only at intervals, he prefers small beer, or wine diluted with water; and, though he expressly forbids all fermented liquors, where the gout is inveterate, yet he strongly recommends dietetic decoctions as preferable to the pure element[*]. Some preparations of water therefore, may be safely adopted, whilst there are others not equally well calculated for the use of man.

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* Hart's "Diet of the Diseased," p. 205.

† See Dolæus upon the Cure of the Gout by Milk Diet, translated by William Stephens, M.D. F.R.S. Dolæus also considers milk as the best medicine that has yet been discovered for the stone. See p. 101.

Among the various fluids compounded *with water*, and other substances, but unfermented, the following are the most remarkable. 1. Infusions of grain. 2. Gruel. 3. Infusions of bread. 4. Infusions of tea. 5. Infusions of sage and other herbs. 6. Coffee and its substitutes. 7. Chocolate. 8. Beef tea. 9. Broths. 10. Soups; and, lastly, Some miscellaneous articles.

1. *Infusions of grain.*—The decoction of pearl, or pot barley, is a common, and useful drink in febrile disorders; and is made palatable, in other cases, by the addition of lemon juice, cream of tartar, wine, raisins, milk, &c. as circumstances may require[†]. This is a very ancient preparation, being recommended even by Hippocrates, and preferred by him to every other aliment, in acute diseases. His *Ptissan*, as that great physician called it, was of two sorts. The first was merely of a decoction of barley and water. The second was the decoction separated from the barley, and boiled again, after it had remained for a sufficient time in a cold state. The lightest parts he skimmed off, and called it "*the cream of barley.*" As we have, by means of pearl barley, which is a modern invention, the power of making *this cream*, in greater perfection than the ancients, the practice ought certainly to be continued[‡].

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[*] Sydenham's Works, by Swan, p. 492.

[†] See Practical Synopsis of Materia Alimentaria, p. 74.

[‡] See Barry's Observations on the Wines of the Ancients, p. 382. To make good barley-water, the barley should first be washed with a little cold water, to take away the dust and any other impurities; then put, with a little sugar

2. *Gruel.*—This infusion of oatmeal is certainly a wholesome article, and is not an unpleasant one, in particular when molasses are mixed with it. Dr. Franklin was accustomed to take a good bason of warm gruel every morning, in which he put a small slice of butter, with toasted bread and nutmeg. The expence of this mess, which was his favourite breakfast, was only three halfpence. He mentions an old Roman Catholic lady, who had disposed of all her property for charitable uses, reserving only twelve pounds a-year to herself, (and of this small pittance she gave a part to the poor), who lived entirely on water-gruel. She never experienced sickness; and her mode of living is a sufficient proof, how wholesome gruel is, and how little is necessary to maintain life and health[*]. Gruel is an excellent supper, mixed with milk, more especially for invalids.

3. *Infusions of bread.*—The virtues of water, with toasted bread put in it, have long been celebrated; and the infusion has certainly a beneficial effect in taking away the rawness and crudity of water, giving it a colour which some people may prefer, and perhaps adding to it some nourishment. In many cases, therefore, it is a beverage to be accounted as safe, if not salutary[†]. Dr. Hancock recommends it in still stronger terms, in consequence of the following experiment. He cut a large thin slice of bread, toasted it carefully and thoroughly, without burning, put it hot from the fire in a pint of cold water, allowed it to stand a while, and then set it on the fire till it was as hot as tea is usually drank. He found, that five or six dishes of this water, with or without sugar, were more refreshing, and sooner took off any fatigue or uneasiness, than any strong wine, strong ale, small beer warmed, coffee or tea, (for he tried them all), or any other liquor that he knew of[‡].

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and the skin of a lemon, into the vessel where it is to be made, and by pouring boiling water over it, a wholesome beverage is obtained.

[*] Franklin's Life, written by himself, p. 122, 126, and 128.

[†] The following receipt for making toast and water, with an account of the advantages thereof, was given me by an intelligent friend.

Take a slice of fine and stale loaf bread, cut very thin, (as thin as toast is ever cut); and let it be carefully toasted on both sides, until it be *completely browned all over*, but nowise blackened, or burned in any way. Put this into a common deep stone or china jug, and pour over it, from the tea-kettle, as much clean boiling water as you wish to make into drink. Much depends on the water being actually in a boiling state. Cover the jug with a saucer or plate, and let the drink cool until it be quite cold; it is then fit to be used; the fresher made the better, and of course the more agreeable.

[‡] See Febrifugium Magnum, p. 48.

Infusions of other sorts of bread, in particular of toasted oat-cakes, also dried or toasted oatmeal, have been recommended*; but the taste of such infusions would not be palatable to any one, who was not accustomed to oat-bread.

4. *Infusions with tea.*—There is no subject connected with diet, that has been more frequently discussed, or concerning which a greater variety of opinions have been entertained, than the use of tea, which, by some, is decried as a poison, and is by others extolled as a medicine, and a useful addition to our food.

Tea was originally imported into Europe for medicinal, rather than dietetical, purposes. It was first used in Britain about the year 1666; and became a fashionable beverage at court, owing to the example of Katherine, the queen of Charles II. who had been accustomed to it in Portugal. But it would not probably have come into general use, had not an idea prevailed among medical men, when tea was first introduced into Europe, that health could not be more effectually promoted, than by increasing the fluidity of the blood; and it was contended, that the infusion of Indian tea was the best means of obtaining that object. It was in the year 1678, that Bontekoe, a Dutch physician, published his celebrated treatise in favour of tea†, to whose authority, its general use in so many parts of Europe, is much to be attributed.

The arguments in favour of tea are many. It is hardly possible to suppose, that such an article as tea, should for ages have been made use of by so many millions of people, as those who are addicted to this beverage in various parts of Asia; and that, notwithstanding the most violent attacks made upon it, from the most respectable authorities that modern medicine can produce‡, the practice should be perpetually extended in Europe, unless it were found at least an innocent, and in some respects even an useful article.

The virtues which have been ascribed to tea, are as follow: 1. It is said to be a grateful and useful beverage to persons in health, to take with their solid food; (which is the view with which decoctions of it are used in China); and, in the opinion of many, it ought, for such purposes, to be preferred to fermented liquors, so general in Europe. 2. There can be no doubt, that it has the property of correcting the pernicious qualities which some waters possess[*]. 3. The drinking of tea is said to have the effect of increasing the digestive action of the stomach, and hence is particularly useful in cases of surfeit and indigestion. 4. It also tends to exhilarate the spirits; though this, like every other stimulus, by constant use, loses its effect. 5. The use of tea has been found salutary in medicine. The simple infusion, without sugar or milk, is an excellent diluent and sedative, in ardent fevers; and, as it promotes perspiration, and other secretions, it is frequently drank with advantage in colds, coughs, rheumatisms, head-achs, &c. 6. Since the introduction of tea, also, complaints of a gravelly nature have greatly diminished[†]. 7. The introduction of tea has certainly done more to promote sobriety, especially among the higher ranks, than almost any other circumstance. The temptation of the fragrant cup, prepared by a fair hand, induces many to remove to the drawing-room, who would otherwise have remained in the parlour, with their bottle companions. 8. The pleasing occupation which the tea-table furnishes, the beauty of the manufacture in which this preparation of *liquid cookery* is carried on and circulated, the cheerfulness and lightness of the meal, compared to the solemnity and business-like appearance of a substantial dinner, all tend to make those meals, where the drinking of tea is the principal object, a general favourite, excepting with those who have voracious appetites, or are severely addicted to the bottle. Lastly, *Where is the substitute that would answer equally well so many various purposes*, or in favour of which so many arguments can be brought forward[‡]?

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* See Code of Longevity, vol. iv. It is said, that an infusion of toasted oat-cake is a remedy for purging, or cholera morbus.

† Entitled, "Tractet von het excellente thruyd Thie."

‡ Among these are to be included Cullen, Tissot, Linnæus, Currie, &c. Boerhaave, on the other hand, refused to write against tea; observing, "can you produce an instance of men taking so cordially to any other liquor, not of an intoxicating quality?"

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[*] The waters of the Seine and the Ness may be rendered safe to strangers, by boiling them with tea, and letting them stand till cool.

[†] It is stated, in Barrow's "Travels in China," p. 349, that the Chinese, notwithstanding their want of personal cleanliness, are little troubled with leprous or cutaneous diseases, and they pretend to be totally ignorant of gout, stone, or gravel, which they ascribe to the preventive effects of tea. Bathing the eyes with an infusion of tea, is also reckoned strengthening.

[‡] An intelligent author, see "Practical Synopsis of the Materia Alimentaria," vol. i. p. 100, gives the following answer to this question. Let those who have been long accustomed to tea, substitute in its place, milk, milk-porridge, gruel, broth, cocoa, or the like, for breakfast; and in the afternoon with milk and water, orgeat or lemonade in the summer, and cof-

The objections which have been urged against the use of tea, are various. It is said, in the first place, That the tea-leaf, when fresh from the tree, is of a poisonous nature; and though it loses some of its acrimony, by its being steeped, and afterwards dried, yet, even in the state in which it is sent to this country, it retains much of its narcotic or stupifying qualities. 2. There is an astringency in tea, which renders it extremely injurious to the constitution; and the immoderate use of such an article, must ultimately relax and debilitate [*]. 3. The manner in which it is prepared, by being dried either on iron or on copper plates, must ultimately be extremely injurious. The corrosions of copper are undoubtedly pernicious; those of iron may not perhaps be equally so, yet the effluvia of any steaming metal cannot be favourable to health. 4. The manner, also, in which the teas are conveyed to Europe, closely packed up in slight wooden chests, lined with a composition of lead and tin, and exposed to be affected by the corrosion of those two metals, must render the article here much more unwholesome than even in China. 5. Not only is the tea itself a pernicious article, but it is often mixed, both in Asia and in Europe, with a variety of other substances of a deleterious quality, with a view, it is said, to improve its colour or flavour. Lastly, It is said, that the very mode in which it is consumed in Britain, is more pernicious than in China. According to the eastern method, a small quantity of leaves are boiled in a kettle, with all the water or milk put into it at once, which is intended to be used at that time. This makes the beverage of an equal strength, and weak at the same time, consequently less injurious: but by our mode of infusing the leaves, with smaller proportions of boiling water, the infusion at first is stronger, and its pernicious qualities are increased.

There can be no doubt that tea, if taken in too great a quantity, is a pernicious plant. Perhaps the use of it has partly contributed to the weak bodies, and enervated minds of the Chinese; and it has also tended to injure the general health, and to weaken the strength of those who are too much addicted to it in Europe [†]. But as the use of it can

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fee in the winter. None of those articles, however, would furnish so sociable a meal as tea. It has become much less sociable, since the practice of having it made below stairs, has unfortunately been introduced.

[*] See "Essays on the Nerves, and on Foreign Teas," by H. Smith, M.D.

[†] Adair, in his "Essay on Diet and Regimen," p. 33, observes, that in proportion as its use has become general, many diseases, especially low fevers,

hardly now be abandoned, and as in moderation it may be rendered innocent, as well as palatable, it may be useful to ascertain those rules which ought to be observed in the consumption of this article.

The first rule to be adopted is, to avoid the high-priced and high-flavoured teas, which generally owe their flavour to pernicious ingredients, and abound most with those active principles, whence the noxious effects of the article arises, and to prefer those which have been prepared in a simpler manner. The green teas owe their colour and flavour, either to the leaves being plucked when young, or to some noxious mode of preparation; for they disagree with numbers of people, and even a single cup will occasion sickness and other unpleasant symptoms. In a view to wholesome diet, those sorts of tea, the infusions of which are of a dark, and not of a green colour, and which go under the general name of Bohea, are certainly to be preferred; and if a small quantity of green tea is put in for the sake of the flavour, by far the greater proportion ought to consist of Bohea, for the sake of health. 2. It is also of great importance to make the infusion properly; the water should be of the best quality, and in a boiling state when the infusion is made. 3. Only a moderate quantity of tea should be infused. 4. There is nothing more essential, than to have the tea mixed with such ingredients as are most likely to correct its noxious qualities, particularly with sugar, and a greater proportion of milk or cream used. 5. Tea should be considered, merely as calculated for the purpose of diluting our solid food, and assisting in its digestion. If it were never taken but either with solid nourishment, or soon after it, there is every reason to suppose, that its pernicious effects would, in a great measure, be prevented. But when taken, as it is too often, without solid nourishment, it cannot fail, greatly to injure the tone of the stomach, to undermine the health, and to justify the arguments which have been urged against it *.

It is certainly injurious to health, that the first meal we take to recruit the body, after it has long wanted sustenance, when it has suffered by the loss it must have sustained, in consequence of the insensible perspiration of the

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hysterical, hypochondriacal, paralytic, and dropsical diseases, have become more frequent, to which *green teas* have particularly contributed.

* See Smith's " Essay on the Nerves, and on Foreign Teas," p. [illegible], in which he sums up the various symptomatic effects, attending the use of foreign teas, taken injudiciously, as a constant aliment.

preceding night; and when it is necessary to prepare for the labours of the succeeding day, should, in general, depend almost entirely upon tea, with a small portion of solid nourishment, more especially if the hour of dinner is distant, and nothing is taken in the interval. Doctor Johnson, therefore, was right in saying, that wherever he dined or supped, he would choose to breakfast in Scotland; for the Scotch plan, of eating meat, eggs, and other nourishing substances at breakfast, or what the French call *Le dejeuner à la fourchette*, or fork-breakfast, is a rational system, and ought to be generally adopted, where tea is taken at breakfast *.

It would be of great consequence therefore, if the taxes on tea were so increased, as to prevent its consumption as much as possible, by persons who cannot afford to take nourishing food along with it; and those on ale and beer reduced, so that the laborious part of the community, might be able to purchase them, and to use them, *in moderation*, as diet. The rich and intemperate, as an intelligent author has well observed, may indulge, if they choose, in the narcotic draught. To their heated and oppressed stomachs, it may not do harm; it may even afford momentary relief. But the poor have no feverish thirst, no feverish heat, to allay after their noon-day repast; and to them, the money squandered upon tea, would purchase a sufficiency of wholesome and substantial food†.

5. *Infusions with sage, &c.*—It is said, that all the benefits resulting from the use of tea, are owing to the warm water merely, and that it would not be difficult to discover some useful and popular substitute for tea; one, in point of health, not only equal, but preferable to that article; of a nature also likely to be generally adopted‡. Indeed the

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* Sportsmen find cold tea very refreshing, in the fatigues they are obliged to undergo.

† It is estimated, that the expence of tea and sugar, at a very moderate calculation, cannot be stated at less than twopence halfpenny each time, or five pence a-day, or seven pounds twelve shillings *per annum*. Such a sum, properly laid out on nourishing food, would be much more beneficial to a poor man and to his family.

Dr. Currie justly remarks, in his Medical Reports, vol. i. p. 241, note—that the diseases of the poor arise, in general, from their ignorance in the most advantageous mode of cookery, and still more, from their indulging in luxuries, such as tea, that consume their means, without adding to their sustenance. The money spent on tea, in particular, is worse than wasted. It is not only devoted to an article that furnishes no nutrition, but to one that debilitates the empty stomach, and incapacitates for labour.

‡ This subject is discussed in Willich's Lectures on Diet and Regimen, p. 415, 416, &c.—He commends various herbs produced in this country. It is astonishing, that in a country so full of speculation and enterprise, and

5. *Coffee and its substitutes.*—Among the various articles of foreign growth, which custom has introduced into general use in Europe[*], there is none, tea excepted, that has occasioned more discussion regarding its properties and virtues, than coffee. This species of bean or berry, is recommended in the morning for a headach, which it will frequently remove. As it has a tendency also to assist digestion, one dish of it, without cream, is found of use to those who have eaten voraciously, and who have strong constitutions. But in delicate habits, it often occasions want of sleep, tremors, and many of those complaints called nervous. It is said to possess one valuable quality, that of counteracting the effects of narcotics[†]; and hence it is used by the Turks with much propriety, in abating the influence of the inordinate quantities of opium they are accustomed to swallow.

The infusion, when not too strong, is a wholesome, exhilarating, and strengthening beverage. It enlivens the spirits, quickens the memory and fancy, and thence is a favourite drink with poets, authors and statesmen. When taken to assist digestion, it should not be mixed with any thing but brown sugar or candy; but when taken as an article of diet, more especially by sedentary or delicate people, it should be mixed with a large proportion of milk. When drunk very strong, it proves stimulating and heating in a considerable degree, creating thirst, and producing watchfulness. By an abusive indulgence in this drink, the organs of digestion are impaired, the appetite is destroyed, nutrition is impeded, and emaciation, general debility, paralytic affections, and nervous fever, are the consequence. Hence the German physicians are led to complain as much of the bad effects of coffee on their countrymen, as we do of tea. It is known that coffee is apt to become strongly acid in stomachs whose digestive powers are weak[*].

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[*] Lord Bacon is the first author who mentions coffee. In his History of Life and Death, (see the chapter on the Operation upon the Spirits, No. 25, Code of Health, 2d edition, vol. iv. p. 163), he says, "The Turks use a kind of herb, which they call Caphe, which they dry and powder, and then drink it with warm water; which, they say, doth not a little sharpen them, both in their courage and in their wits; notwithstanding, if it be taken in a large quantity, it affects and disturbs the mind."

It is supposed that coffee was first used in England about the year 1652.

[†] Coffee, also, might be used with great advantage to obviate the painful effects of heat, cold, and fatigue upon the body. I once knew a country physician, says Dr. Rush, who made it a practice to drink a pint of strong coffee, previous to his taking a long or cold ride. It was more cordial to him than spirits, in any of the forms in which they are commonly used. —*Rush's Inquiry into the Effects of Ardent Spirits*, p. 25.

The best coffee is still imported from Mocha. It is said to owe much of its superior quality to its being kept long; and the value of this article is much improved by attention to the following circumstances: 1. Its growth in a dry situation. 2. The berries being thoroughly ripe. 3. When gathered, being well dried in the sun: and, 4. Being kept at a distance from all other substances, as spirits and spices, by which its taste or flavour may be injured[†].

Coffee, mixed with cream or milk, forms a common breakfast of nine-tenths of the Parisian females, though it is said to be prejudicial to their health and beauty[‡].

After dinner, and simply prepared with water, coffee is thought to assist digestion; but many find it, if too strong, and drank without sugar, heating and injurious[§].

Various articles have been made use of as substitutes for coffee. Sometimes the common bean. The torrefaction of rye, mixed with a few almonds, has also been attended with some success. In Germany and Sweden, the root of chicory is not unusual among the middling and lower ranks, and has been much sanctioned by the different governments of those countries, with a view of diminishing the expence of importing a foreign article, in such general use. Wheat, barley, pease, and dried carrots, have also been tried; but they have little resemblance to real coffee, except what they acquire from their burnt taste, and empyreumatic oil. A coffee made of acorns, is much recommended in asthmatic and spasmodic complaints; but, as it contains an uncommon quantity of oil, too much circumspection cannot be employed in the use of it[‖].

7. *Chocolate.*—This is the most nourishing of the three exotic liquors which have been introduced into Europe. It is the cocoa nut reduced into paste, with a mixture of sugar, milk, or eggs; but it is often mixed with various aromatics, by which it is rendered more heating, and less wholesome. It is best when not boiled too much. When prepared for use, it should be merely dissolved, as too much heat makes it harder of digestion. It may be properly recommended as a restorative in cases of emaciation and con-

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[*] Adair's Essay on Diet and Regimen, p. 36, note.

[†] Nisbet on Diet, p. 347.

[‡] See Almanac des Gourmands. Seconde année, p. 208.

[§] Pinkerton's Recollections of Paris, vol. ii. p. 206.

[‖] Willich's Lectures on Diet, p. 420.

sumption, and it may be of use to old and decayed people*; but it is too rich for common aliment, as it becomes oppressive, and at last cloying to many stomachs, on account of its oily quality. To the young and sedentary, any immoderate use of it is at all times improper. Indeed, unless the nut is properly prepared, and the liquor is made fresh and good, it has a greasy or rancid taste, and disagrees with almost any stomach†. To the corpulent, and to those employed in mental pursuits, it is highly pernicious. It yields so much nourishment, that it may supply at once the place of victuals and drink. When it was first introduced among the Europeans, whole volumes were written on its manifold virtues; which reputation, however, it has gradually lost, since it became more common‡.

Cocoa is used as a substitute for chocolate, but improperly; for it is only the husky part of the chocolate nut, mixed with a little of the nut, and some dross and dust. Very weak chocolate is equally digestible, and a more cleanly food§.

8. *Beef Tea.*—This is a very simple article, being made by boiling some meat in water, and drinking the decoction; or by pouring boiling water over a certain proportion of raw and lean meat, cut in small pieces, or well beat, as for steaks, and seasoning it to the palate. This species of liquid food is often beneficial to delicate constitutions.

9. *Broths and Soups.*—Among the articles of *liquid food*, broths and soups ought not to be omitted. If properly made, they serve both for meat and drink, and it is evident that less drink is necessary, when the solid food is diluted with water. There is a prejudice against the use of broths in England. It is said that they are only calculated for cases where the powers of digestion are weakened; and that the flesh and vegetables used in broths, will not afford so much nourishment, as if they were taken in their solid form, and mixed with saliva, in the act of mastication‖. It is also said, that food of this nature gives the stomach too little to do; and that the meat itself, (the substance being extracted out of it), is left in that undigestible state, as to

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* It is observed, that chocolate-makers are troubled with dry asthmas, and disorders in the lungs; but it is not owing to the effluvias of the chocolate, [illegible] fumes of charcoal used in the making of it,

† [illegible]tory of Health, p. 377.

‡ [illegible] Health, p. 155.

§ [illegible] Cautions, p. 222.

‖ [illegible], vol. ii. p. 668.

be rendered unfit for repairing the waste of the body, or conveying the proper stimulus, which animal food is intended to produce[*].

These doctrines are justly condemned by other authorities. In regard to eating solid food alone, is it not necessary to drink after it? By doing so, the solids, and the liquor taken, must be converted into a sort of broth, and the difference between the two consists in this, that in the one case, the broth is made in a pot, and in the other, in the stomach[†]. As a proof of the utility of broths or soups, it may be observed, that the greatest heroes of antiquity lived upon them[‡]; and that many of the healthiest and hardiest rustics in modern times, (those who inhabit the more cultivated parts of Scotland), live principally on liquid diet.

The writer who has paid the greatest attention to the improvement of cookery, for the benefit of the poor, is Count Rumford. In his economical and philosophical essays, he has strongly recommended the use of broths and soups, and has given a variety of forms for making them cheap, nourishing, and wholesome[§].

10. *Miscellaneous articles.*—Among these, *capillaire* may be mentioned. It is a rich syrup mixed with lemons, and diluted either with spring water or milk; and is a pleasant drink, more especially during the hot seasons of the year. *Lemonade* answers nearly the same purpose. *Orgeat*, which is made of pounded blanched almonds, a few bitter ones, with clear spring water, and a table spoonful of orange-flower water, properly diluted, is not only a pleasant beverage, but used in France medicinally as a febrifuge.

Sugar and water, we are told, is, at present, a very common drink at Paris, and reckoned extremely wholesome, as it almost instantly alleviates any slight indigestion, or uneasiness of the stomach, obviates the effects of an extraordinary glass of wine; and, if taken at the beginning, cures a common cold. A glass of sugar and water is often taken at Paris before going to bed[*];

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[*] Turnbull's Medical Works, vol. i. p. 46.

[†] Domestic Medicine, p. 643.

[‡] See Hufeland's Art of Prolonging Life, vol. ii. p. 252.

[§] The Scotch barley broth being much celebrated, the following receipt is given as an excellent mode of making it.

Take a tea-cupful of pot, or pearl barley, and one gallon of water. Boil gently for half an hour, then add three pounds of lean beef, or neck of mutton, some carrots and turnips cut small, a pint of green pease, if in season, and some onions. Let the whole boil gently for two hours longer in a close soup-kettle, when the broth will be fit for use. This is a wholesome national dish, giving the stomach no trouble, as the chyle produced by it is of a mild balsamic nature, and incapable of furring up the glandular system.—See Culina Famulatrix Medicinæ, p. 80.

3. *Of Fermented Liquors.*

Men in all ages, and in all countries, have usually employed much thought, in order to discover some liquor, more agreeable than water to the taste; and also more likely to strengthen the body, to cheer the spirits, and to relieve the mind. Even the wildest savages, have endeavoured to find out some strong intoxicating liquor calculated for those purposes. Virgil describes a nation in the north, who regaled themselves with a liquor made from the spirit of the service-tree, which rendered them gay and frolicksome[†].

In hot countries, it is true, that such liquors are neither so necessary nor so wholesome. The perspiration there is so excessive, that the blood stands in constant need of a supply of its aqueous part. This can only be done by watery liquors, as fermented ones could not be taken in sufficient quantity, without increasing the inflammatory disposition by the stimulus, which it seems the intent of nature to counteract. But in cold countries, the body has little spontaneous tendency either to inflammation or putrefaction; on this account, animal food, and fermented liquors, are more proper to be taken; and, indeed, where animal food is used in a large proportion, fermented liquors become in a great measure necessary, to obviate, in some degree, the septic tendency of such a way of living[‡].

The various sorts of fermented liquors may be considered under the following general heads, namely, 1. Wine produced from the grape. 2. Wines made from other articles. 3. Cyder. 4. Perry. 5. Malt liquors. 6. Spruce beer; and, 7. Honey liquors.

1. *Wine.*—So extensive a subject as that of wine, on which so many volumes have been written, cannot here be discussed at any length; but we shall briefly consider, 1. The general nature of that species of liquor. 2. The different sorts of it commonly made use of. 3. The quantity that may be safely used. 4. The advantages that are ascribed to its use. 5. The objections which have been urged against it. 6. The means of preventing or detecting adulteration; and, 7. Such miscellaneous observations

[*] Pinkerton's Recollections of Paris, vol. ii. p. 300.

[†] Goguet's Origin of Laws, vol. i. p 109.

[‡] Falconer's Observations on Cadogan's Dissertation on the Gout, p. 48.

connected with so extensive a subject, as could not well be comprehended under any of the preceding heads.

Wine is properly the fermented juice of the grape; and nearly resembles the animal fluids. It is a light, clear, and beautiful liquid, of a fragrant scent, and delicious flavour, easy of digestion, and the most homogeneous to the human body of all vegetable productions[*].

When properly prepared, it possesses many peculiar qualities, very different from any other natural or artificial production. Taken in a just proportion, it surprisingly strengthens and excites the spirits: and, in several diseases is a most valuable medicine[†].

2. Wines have been variously classed, according to the countries where they are produced, or the properties of which they are possessed; but, on the whole, they may be divided into four kinds, *the acid*, *the sweet*, *the mild*, and *the austere*.

The acid wines, as the Rhenish and Hock, are the least heating, the most diuretic, and the best calculated for consumption in hot weather. They pass freely by the kidneys, and are gently laxative. But all thin or weak wines, though of an agreeable flavour, yet from their containing little alcohol, are readily disposed to become acid in the stomach, and to occasion or increase calculous complaints.

The sweet wines form a numerous class, including many sorts produced in Hungary, Spain, France, Italy, Greece, the Cape of Good Hope, &c.

When these are properly fermented, and have not been adulterated by the addition of sugar, honey, &c. they afford, if taken in moderate quantities, a true medicine to the weak and convalescent; but in great quantities, they are heating and injurious[‡].

The mild wines, such as Burgundy, Sherry, Madeira, including also the best wines produced in Champaign, &c. are more cordial than the acid ones, and can be taken with safety in greater quantities than the sweet. This is likewise the case with claret, though in some degree acid.

The austere and astringent wines, such as port, when not mixed with too large a proportion of brandy, are generous and stomachic, and well suited to the generality of British constitutions. They are peculiarly well calculated for cold and moist weather; but, like other red wines, they are apt to occasion costiveness, which renders a change to white wine frequently advisable. They are often useful, however, in restraining immoderate evacuations, in diarrhœas, and complaints of a similar nature.

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[*] The Juice of the Grape; or, Wine preferable to Water. By Doctor Shaw, p. 5.

[†] Barry on the Wines of the Ancients, p. 12.

[‡] The celebrated Sydenham preferred Canary to any other wine. He took little more than a quarter of a pint of it immediately after dinner, every day, to promote digestion, and to drive the gout from his bowels.—*Swan's Sydenham*, p. 590.

3. The quantity of wine to be taken, must depend on various circumstances, as upon the natural strength of the liquor, whether it is taken pure, or diluted with water; whether it is the sole kind of liquor taken at the time; or, whether the object in view be to take it as a medicine*, or to drink it as a diluent for solid food; or, to indulge in a social and exhilarating glass.

As a tonic and stomachic medicine†, three moderate sized glasses of good wine after dinner may be sufficient. As a diluent for solid food, probably double that quantity, or from half a pint to a pint, with water, or some other liquor, may be safely allowed‡. As a zest to social intercourse, from half a bottle, to a bottle of generous wine may be occasionally permitted, to persons in perfect health, but it is not advisable, to go frequently to that *utmost limit* of rational indulgence.

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* Though in common cases, a small quantity of wine, as a tonic, may be sufficient, yet, in some disorders, particularly the typhus fever, it is given in much greater abundance. Trotter, in his Medicina Nautica, vol. i. p. 287 and 29 , after observing, that wine is the most grateful of all stimulants in low fevers, adds, that he has given it to the extent of four pints in twenty-four hours; and that, under particular circumstances, even a greater quantity of wine may be proper.

In the putrid sore throat, also in the small-pox, when attended with great debility, and symptoms of putridity, in gangrenes, and in the plague, wine is to be considered as a principal remedy; and in almost all cases of languor, and of great exhaustion of strength, wine is proved by experience, to be a more grateful and efficacious cordial than can be furnished from the whole class of aromatics.

The use of wine, as a cordial in fever, is of very ancient date. Pliny the elder says: Cardiacorum morbo, unicam spem vino esse certum est. Aretæus, and Cælius Aurelianus, give similar evidence. See Trotter's Essay on Drunkenness, p. 30. Plutarch reports, that when the plague raged in the army of Julius Cæsar in Africa, no remedy was found so effectual as good and generous wine. Asclepiades wrote upon the use of wine, which he introduced into almost every remedy, observing, that the gods had not bestowed a more valuable gift on men.—*Pliny*, L. 23, No. 1.

† In regard to wine as a medicine among the ancients, that subject is very fully treated of in Barry's Observations on the Wines of the Ancients, chap. xiii. p. 355. He informs us, that Hippocrates always considered his vinous mixtures, as a principal instrument in his medical regimen, and claims the singular merit of being the first who applied them to medical uses. He directed three different mixtures of the strong wines, and even diluted the weak wines with water§. In fevers, he mentions a composition of one part of old Thasean wine, to twenty-five parts of water.—Dict. p. 268. Hipp. de Morb. Lib. 3.

‡ Dr. Cheyne, in his Essay on Health, p. 75, says, that the best strong liquor for weak and studious people, is wine; the best quantity, a pint in

§ Barry on the Wines of the Ancients, p 363.

4. There is no subject on which authors have differed more, than concerning the advantages and disadvantages of wine. We shall begin with stating the arguments urged in support of this favourite beverage.

Were we to drink, it is said, pure water alone, it would find its way out of the body, without carrying off the putrescent particles of the blood with it; but when we use mucilaginous fluids, as wine, beer, &c. they remain some time in the blood, mix with those putrescent substances, and gradually carry them off. Hence these artificial liquids, if moderately taken, so as not to injure digestion, are of real use[*].

It is further contended, that the moderate use of wine is conducive to health; that to many constitutions it has the effect of a most generous cordial; that those who indulge in the use of it, are less subject to fevers of the malignant and intermittent kind; that it has a powerful effect upon the organs of digestion, upon the circulation of the blood, and upon the nervous system[†].

It is also said, that not only physicians, but even many philosophers, have recommended the use of wine as a preservative against chagrin, and as a salutary remedy for diseases. Seneca informs us, that Solon and Cato sometimes cheered themselves with wine; a glass of which they considered as tending to produce strength, and as a remedy against many disorders, as well as an antidote to grief. Plato, though severe against the use of wine for the young, yet permitted men of forty years of age to drink it with moderation, and even invites them to take a cheerful glass.

It is singular, that Haller[‡], and Hoffman[§], two eminent

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twenty-four hours; and the best way of drinking it is, three glasses with, and three glasses without, water. Dr. Cadogan, in gouty cases, when his patient has recovered health and strength, and can take exercise, admits of a pint of wine only once or twice a-week, for the sake of good humour and good company merely, and not as good for health. Diss. on the Gout, p. 91.

[*] This is an old observation. In the words of the Salernian school:

Potus aquæ sumptus comedenti incommoda præstat;
Hinc friget stomachus, crudus et inde cibus.

[†] Practical Synopsis of the Materia Alimentaria, vol. i. p. 104. See also, Valangin on Diet, p. 134.

[‡] De Temperamento.

[§] Physiol. Lib. xvii, sect. 1—13.

[illegible] men of sober habits, and dis- [illegible] learning, should consider wine [illegible] ure: and that the latter, in parti- [illegible] Pegasus of poetry. Hoffman also [illegible] who use wine, are more ingeni- [illegible] that the liberal arts, or learned [illegible] flourish more, than in those places [illegible]

[illegible] greater lengths in the discussion of this [illegible] sufficient to extract the following lines [illegible] which seems to give the substance [illegible] controversy.

> [illegible] like simple element dilutes
> [illegible] gives the chyle so soon to flow.
> [illegible] the stomach, indolent and cold,
> [illegible] with its duty—*animate with wine*
> [illegible]*.

[illegible] however, who approve of the use of wine, [illegible] with restrictions in regard to quantity, but [illegible] strongest injunctions to prevent its being used [illegible] and still more in infancy†. It is an old adage,—[illegible] *vinum*."—But though wine may be called [illegible] old age, it is a poison to youth.

[illegible] objections which have been urged to the use of [illegible] very formidable.

Wine, it is said, produces more diseases than all the [illegible] of illness put together‡.

When wine is taken in excess, premature old age is the [illegible] consequence. The wrinkled and dejected visage,—the bloated and sallow countenance,—the dim eye,—the [illegible] lip,—the faultering tongue,—the toothless gums,

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* Armstrong's Art of Preserving Health, book ii. line 420. The poet adds, in behalf of malt liquor,

> Tho' golden Ceres yields
> A more voluptuous, a more sprightly draught;
> Perhaps more active.

† Garnett's Lectures on Zoonomia, p. 287. An ingenious surgeon tried the following experiment. He gave to two of his children, for a week alternately, after dinner, to the one a full glass of sherry, and to the other a large China orange: the effects that followed, were a striking and demonstrative proof, of the pernicious effects of vinous liquors, on the constitution of [illegible] in full health. In the one, the pulse was quickened, the heat [illegible] the urine became high coloured, *and the stools destitute of the usual* [illegible], whilst the other had every appearance that indicated high [illegible] same effects followed, when the experiment was reversed. See [illegible] Hygeia, vol. ii. p. [illegible]

‡ [illegible] que l'on peut [illegible] sang de la terre, est l'ennemi capital [illegible]—*Tableau de* [illegible]—See also Garnett's Lectures on [illegible] p. 287.

—the trembling hand,—the tottering gait,—are so many external signs of bodily infirmity; while weak judgment, timidity, irresolution, low spirits, trifling disposition, and puerile amusements, discover a mind poisoned by the bowl of excess, not broken by the hand of time[*].

The exertion of strength, produced by stimulating and fermented liquors, is destructive to health; for the natural and salutary means of strengthening the constitution, are, *rest*, and *sleep*, with *proper food*, and not fermented liquors[†]. However useful and profitable it may be, to use fermented liquors medicinally, under particular circumstances, it should ever be recollected, that they *do not furnish an increase of the powers of life*, or ability to produce labour permanently; they only stimulate and excite the action of the powers of the body, without supplying the expenditure of the principle producing those powers; they in short may produce, for a short time, more action than otherwise could be excited, but are succeeded by debility or disease, and a worn-out constitution.

6. It is of the utmost consequence, when wine is used, to prevent or to detect its adulteration. Not only the quantity, but, perhaps more than in any other thing, the quality of wine ought to be attended to. Thousands of lives have been sacrificed, to gratify the avarice of the treacherous dealers in this important article. A single bottle of adulterated wine, can produce the most dangerous and lasting effects, which may poison with disease the course of a whole life. Professor Hahnemann has invented an excellent test, under the name of *liquor vini probatorius*, prepared thus:—One drachm of the dry liver of sulphur, and two of the cream of tartar, are shaken in two ounces of distilled water till it be quite saturated with the hepatic air. The liquor is filtered through blotting paper, and kept in a close stopped phial; sixteen or twenty drops of which may be put into a small glass of the suspected wine.

If it turn black, or even muddy, if its colour approach to that of a dark red, if it has first a sweet, and then an astringent taste, it is certainly impregnated with some preparation of lead. But, if the dark colour be of a blue tinge, like pale ink, we suspect the wine to contain iron. Again, a sediment of blackish grey colour, denotes copper or verdigrise. But, if the wine shews only turbid, with a white sediment, it is certainly devoid of any metallic impregnation.

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[*] See Trotter's Essay on Drunkenness. Every apartment, it is said, devoted to the circulation of the glass, may be regarded as a temple set apart for the performance of human sacrifices. And they ought to be fitted up, like the ancient temples of Egypt, in a manner to shew the real atrocity of the superstition that is carried on within their walls.—*Beddoes's Hygeia*, vol. ii. Essay viii. p. 118.

[†] Trotter's Essay on Drunkenness, p. 164. Proper food, in proper quantity, is exciting enough for the strong; and without caution, is apt to be over-exciting to the weak. Extraordinary stimulants should, therefore, be reserved for the seasons when the powers of the system begin to flag.—*Beddoes's Hygeia*, vol. ii. p. 38.

Over sulphurated white wines produce very heating and dangerous effects, and are easily detected, by putting in a piece of silver, which immediately turns black *.

7. The following miscellaneous observations could not be included under any of the preceding heads.

New wines are by many objected to, being liable to a strong degree of acescency when taken into the stomach †, and thereby occasioning much flatulency, and eructations of acid matter; heartburn, and violent pains in the stomach, from imperfect fermentation, are also often produced; and the acid matter, by passing into the intestines, and mixing with the bile, is apt to occasion colicks, or excite diarrhœas.

Old wines, on the other hand, though preferred by connoisseurs, and though they may be deemed more palatable, yet they are certainly not more wholesome, if kept beyond the time of the fermentation being completely finished ‡.

The gentle stypticity, or astringency, in claret, renders it, on the whole, the most wholesome of any strong liquor whatsoever, to be drank plentifully; and the great quantity of tartar contained in it, certainly prevents its relaxing the stomach, or rarifying the blood, so much as

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* See Dr. Molleson's Observations, Code of Health, 2d edit. vol. ii. p. 42.—On this interesting part of the inquiry, see Quincy's Lexicon-Medicum, by Hooper, voce *Wine*; also Willich's Lectures on Diet and Regimen, p. 401.

† Cornaro, however, found, that new wine agreed best with his stomach. He was obliged, from a peculiarity in his constitution, to give up drinking wine from the beginning of July to the end of August; but a moderate quantity of new wine had power sufficient to restore him in two or three days, to his former health and strength. He therefore calls wine the milk of old age. See Code of Health, 2d edition, vol. ii. p. 106.

‡ Adair's Medical Cautions, p. 248.—In Walker's Hints to the Consumers of Wine, 8vo printed at Edinburgh, 1802, it is justly remarked, p. 43, that there is a possibility of keeping wine too long. This is an error natural to the connoisseurs. Among such, *tawny port* was once a fashionable treat; but nature and experience join in teaching us, that wine, like every other thing else, attains to a certain summit of perfection, beyond which its state is decline; and it may be depended on, that when the colour begins to fade, the true body and best qualities are failing also.

other spirituous liquors. But the white wines agree better with some bilious constitutions, and those subject to be costive [*].

The low and small wines ought to be cautiously avoided, as they are too frequently impregnated with poisonous qualities, extracted from lead. It is owing to these weak, but cheap wines, thus adulterated, that the lower class of people, in the wine countries, have that ghastly and half-starved appearance, which distinguish them from their richer neighbours, and those of their own rank in the northern nations [†].

The following judicious rules are given by Galen, regarding wine for those advanced in life:

That wine is best for old people, which is strong and diuretic; it should be strong, in order to diffuse a proper heat over their cold limbs, and diuretic, to carry off any superfluous humours, which, by remaining in the body, might become injurious to their health. They should, therefore, choose their wine of a light thin body, because such is commonly diuretic, and of a pale or yellow colour, because such is the strongest; and should abstain from thick, black, or astringent wines, because they are apt to cause obstructions in the bowels. Nor, indeed, is sweet wine good for old men, unless they are very lean, and upon that account require rich wines to nourish them; but then they should be of the generous, pale, or yellow kind [‡].

It was formerly observed by Hippocrates, that wine, diluted with water, is more friendly to the head, breast, and urinary passages; but wine alone, or mixed with very little water, agrees best with the stomach and bowels [§].

The ancients, it appears, were accustomed to mix salt water in their wines. Hippocrates mentions that practice as not unusual in his time; and Cato recommends that the sea-water should be taken up at a great distance from the land, and kept in a cask for some time, until it was more depurated[*]. Pliny tells us that the advantages of this mixture in wine were accidentally discovered, by a servant stealing some wine, and filling up the vessel with sea-water, which turned out of superior quality[†].

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[*] Forster's Treatise on the Causes of most Diseases incident to Human Bodies, and the Cure of them, p. 236.—Barry, however, observes, in his Treatise on the Wines of the Ancients, p. 438, that claret is now so much mixed with Spanish wines, that it has altogether lost those grateful and salutary qualities for which it was so long esteemed.

[†] Falk's Guardian of Health, p. 146.

[‡] Code of Health, 2d edit. vol. ii. p. 144—Sherry answers best this description. It is particularly necessary for old people to be attentive to the wine they drink. Cornaro found his strength declining, when the wine he commonly made use of began to be depraved, and to want its usual spirit.

[§] Code of Health, 2d edit. vol. ii. p. 80.

The ancients had a mode of making their wines thicker, or more *inspissated*, than the moderns[‡]. The Maronian wine was so much distinguished for its superior strength and substance, that, according to Homer, it required twenty parts of water to dilute it properly.

> Such were the wines, to quench whose fervent steam,
> Scarce twenty measures from the living stream,
> To cool one cup sufficed.—*Pope's Odyssey*, book ix.

The ancients had a custom also, of cooling their wine with snow. Xenophon says, it was necessary to procure snow to cool their wines in summer, which otherwise could not be drank with any pleasure. The mixture of hot water of the purest kind, with wine, and in a just proportion to its strength, and afterwards cooling both in snow, was a most elegant and salutary preparation; for it is well known, that boiling water, immersed in snow, will sooner acquire *an exquisite degree of coldness*, than when immersed in its common cold state[§].

In regard to mixing water with wine, it is recommended by the celebrated Sydenham, who thought water alone crude and pernicious, but considered wine, well diluted with water, as a safe drink, particularly to those afflicted with gouty complaints[‖]. It is more necessary for wine

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[*] Barry on the Wines of the Ancients, p. 55, and 59.

[†] Nat. Hist. lib. xiv. c. 8.

[‡] The thickest wines in modern times, are those of Hungary. They are made of the juice which exudes, without pressure, from very ripe grapes.

[§] Barry on the Wines of the Ancients, p. 169.—It is a curious fact, that the ancients were at first accustomed to put snow and ice *into* their wines; but they were thus vitiated by all the impurities therein contained. Nero invented, however, a mode of immersing the vessel, which contained the wine mixed with boiled water, into snow, by which means it [illegible] -kly received a peculiar, pure, equal, and intense degree of coldness. [illegible] says, that Nero valued himself more on this improvement in luxury, [illegible] -ugustus for all the encouragement he had given to the fine arts.—[illegible] *Wine*, p. 127, lib. ii.

[‖] [illegible] -n's Sydenham, p. 472. This plan of mixing wine and water, as has [illegible] observed, was a favourite practice among the ancients. Hence [illegible] -ed *Rectus*, because he first introduced it, having taught a [illegible] Athens to dilute his wine and water; men who, through drinkers to adopt this plan in England, than even on the continent; because, in wine countries, they have a variety of weak wines, which may answer as a general beverage; whereas the wines we import are of a strong quality, and, consequently, ought not to be taken for common drink, without being diluted.

Another mode of mixing wine with water, is in the well-known beverage called *Negus*, consisting of diluted wine, with the addition of the juice of lemons, or Seville oranges. The addition of the fruit makes it diuretic and stomachic. It is reckoned much more wholesome, if, with red port wine, oranges are used instead of lemons.

On the whole, it may be observed, that complete abstinence from wine ought not to be established as a general rule. To many constitutions, it proves evidently hurtful, but to others, it is the most beneficial means of restoring health and strength that has hitherto been discovered. Experience is here, as in other cases, the surest guide.

2. *Made Wines.*—Nature having denied the grape to northern countries, the inhabitants thereof endeavour to make up for this want, by extracting a vinous liquor from other substances, as currants, raspberries, gooseberries, cherries, oranges, raisins, birch, alder, balm, and cowslip: various receipts have been published for making these kinds of wine, for which books on cookery may be consulted. In the course of the manufacture, it appears, that water, in different proportions, is mixed with the other ingredients. It was the fashion among physicians formerly, to reprobate home-made wines as unwholesome, but that can only be the case, when their fermentation is not well conducted, or when they are made use of before they have attained a proper age. If, in these respects, they are not exceptionable, they are often, when made in private families, preferable to foreign wines, being at least free from adulteration[*]. They ought to be prepared with at any rate a proportion of raisins instead of sugar, with less water, and

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drinking, staggered before, by mixing water with their wine, began to go straight. It is also said, in ancient mythology, that the jolly god was educated by the Naiads, or the nymphs of the rivers and fountains; implying, that men ought thence to learn to dilute their wine with water.

[*] See Nisbet on Diet, p. 118. Adair's Medical Cautions, p. 248; also, his Essay on Diet and Regimen, p. 46. In the Transactions of the Caledonian Horticultural Society, there are some important observations on the manufacture of made wines, by Doctor Macculloch of Woolwich.

with a larger proportion of the natural juice of the fruit, than is commonly allowed.

Cyder.—The juice of apples, made vinous by fermentation, is known under the name of cyder, or *apple wine.* It is a wholesome liquor, provided it is properly made, and used with moderation. There is a celebrated proof of the wholesomeness of cyder, mentioned by Lord Bacon, who states, that eight old people, some of whom were near, and some above a hundred, who drank nothing but cyder all their lifetime, were so strong at those ages, that they danced and hopped like young men. Cyder is sometimes fermented and kept in leaden vessels, which produces painful and dangerous colicks; but that is the fault of the manufacturer, and not of the liquor itself. If drank to excess, it does not intoxicate so soon as wine; but the drunkenness it occasions lasts longer, and is more injurious to health[*].

Cyders, at the same time, are too often but ill fermented, compared to wines, and are impregnated with much undecomposed acid; for the apple yields but a small quantity of saccharine matter, at least not sufficient, by its fermentative quality, to overcome the whole of the malic acid, which abounds in the fruit, and to convert it into vinous spirit[†].

This objection might be obviated, by the addition of raisins, honey, or sugar, in moderate quantities. In America, cyder is reckoned perfectly wholesome. It sometimes disagrees with persons subject to the rheumatism; but it may be made inoffensive to such people, by extinguishing a red-hot iron in it, or by mixing it with water.

Dr. Rush has given a receipt for making what he calls *Pomona wine*, from apples[‡]. It is made by boiling down two barrels of cyder, fresh from the press, into one, fermenting it afterwards; and, if kept for two or three years, in a dry cellar, it affords a liquor, which, according to the quality of the apple from which the cyder is made, has the taste of Malaga or Rhenish wine. It is a pleasant drink in summer, mixed with water.

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[*] Lemery on Foods, translated by Hay, p. 347.—Valangin on Diet, p. 131.

[†] See Rush's Inquiry into the Effects of Ardent Spirits, p. 21. The late frosts in spring often deprive the Americans of their apples. To obviate this calamity, they give their orchards a north-west exposure, so as to check vegetation. When they expect a night of frost also, they kindle two or three large fires of brush or straw, to the windward of the orchard. This easy expedient has often preserved the fruit, which otherwise would have been lost.—*D.n.*.

[‡] In the Lancashire Agricultural Report, by Dickson and Stevenson, p. 434, there is a receipt for making cyder with honey, so as to produce a liquor of excellent quality.

4. *Perry*.—This liquor is the fermented juice of the pear; and, when properly manufactured, is an active and pleasant liquor; indeed, after it has for some time been kept bottled, it resembles much champaign.

Perry, if properly fermented, and of a proper age, is, in general, reckoned a safer liquor than cyder, possessing less acidity. It is particularly recommended as counteracting the poison of mushrooms, or other fungous productions; and, in that case, is improved by an addition of some spirituous liquor. It is said, that all liquors of this kind, which are liable to produce flatulency and acidity, are likewise much improved by their junction with sugar and aromatics, as nutmeg and ginger[*].

5. *Malt Liquors*.—We are informed, that, in very early periods of history, the art of making a fermented liquor from barley, was discovered by the Egyptians, which was anciently called barley wine, (*vinum hordeaceum*), and was afterwards known under the name of northern wine, (*vinum regionum septentrionalium*), being principally used in northern countries: (indeed, in hot countries, or in very warm weather, it can hardly be made at all); and by some it has been called the strength of corn, or *liquid bread*.

The points that require to be here considered, are,—1. The different sorts of grain of which malt liquors are made. 2. The different sorts of liquors made of barley, and the ingredients of each. 3. The advantages resulting from the use of malt liquors. 4. The objections thereto; and, 5. Some miscellaneous particulars, which merit attention.

1. Malt liquors are principally made from barley, but it may be likewise prepared from the infusion of malted oats, of malted rye, (which produces a drink lighter and more diuretic than the common barley beer), of malted wheat, and, in some countries, of malted maize, or rice. Sometimes, also, different grains are mingled together, as oats with barley, by which the liquor is made more cooling for summer; and, consequently, more wholesome at that season of the year[†]. In former times, it was not unusual to

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[*] Nisbet's Practical Treatise on Diet, p. 317. In Normandy, they make a spirituous liquor both from cyder and perry, which the natives of that country consider excellent of its kind.

[†] Venner, in his Via Recta ad Vitam Longam, says, That beer made of

mix some pease with the barley, by which, strength was added to the beer, and it kept much longer*; but on the whole, it has been found most expedient, to make beer from the two-rowed barley, or from the inferior sorts called beer or big. In the years 1800 and 1801, when the price of grain was very high, it was allowed to brew beer from sugar and molasses: but only table-beer was attempted.

2. The great division of barley liquors is, into small beer, strong beer, porter, and ale, to which purl and mum may be added, though not much used in this country.

Small beer is best calculated for common or general use, being less heating and stimulating than other malt liquors, and when used soft and mild, being an excellent diluent with food; but if it is stale and hard, it is very apt to produce colicks, and bowel complaints, by which many have suffered.

As this liquor, when fresh, abounds with carbonic acid, or fixed air, it is the most useful diluent for labourers, because it cools the body, abates thirst, and, at the same time, stimulates moderately the animal powers. It also affords more nourishment than water with acids or spirits, and, when full of fixed air, is found even useful in consumptive cases†.

Small beer ought not to have too great a proportion of hops, but should be thoroughly fermented and purified, for all gross dregs must prove injurious to the animal system‡.

The celebrated Sydenham was accustomed to take for supper, a draught of small beer brewed with hops, which he considered as less likely to breed gravel or calculous matter than the unhopped. He also took another draught, when going to sleep, in order to dilute and cool the hot and acid humours lodged in the kidneys, which bred the

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barley and oats, in equal proportions, or two-thirds barley, and one of oats, is better than when made of barley alone, more especially in the hot seasons of the year, as it receiveth a singular cooling quality from the oat.

A sort of beer has also been made of two-thirds malt, and one-third *raw-grain*: but it is not much esteemed, being merely attempted in consequence of the high duties on malt, and must be drank in three or four days after it is made.

* Hart's Dict of the Diseased, p. 125.

† There is a particular kind of beer brewed at Ashburton in Devonshire, very full of fixed air, and therefore known by the name of *Ashburton pop*, which is supposed to be as efficacious in consumptions as even the air of Devonshire itself.

‡ Falk's Guardian of Health, p. 148.

stone. A large draught of small beer also, prevents bloody urine, if likely to be brought on by exercise*.

The strongest species of beer, is not so much in use now as formerly, owing to the introduction of that more fashionable liquor called porter. It is still, however, brewed where the art of making porter is not known. Strong beer, it is said, ought to have six properties. 1. A pleasant taste. 2. Being clear and thin. 3. Properly fermented. 4. Old, and purged from dregs. 5. Of an adequate strength; and, 6. Made of good materials†.

Strong beer is accounted more nutritious than wine, and more laxative; and, in moderate quantities, is of service, as a wholesome, refreshing and strengthening drink‡.

That species of liquor, known in England under the name of porter, is prepared in a peculiar manner; and, besides the ingredients commonly used in malt liquors, other articles are sometimes mixed in it§. It certainly is, when properly made, not only a palatable, but, in moderation, a wholesome drink, and would often agree with a weak stomach, when ale would not. But since such heavy duties have been imposed upon malt liquor, the brewer has been obliged to use higher heat for searching his malt more severely, and to attenuate it too much in the fermentation. Hence, it has been greatly deteriorated, and cannot be so strongly recommended as it deserved to be some years ago. London porter, as formerly made, was certainly possessed of such stomachic and diuretic powers, as to give it, in many cases, a preference over common beer and ale. When, however, it is strongly impregnated with bitters of a narcotic kind, it is apt to induce drowsiness, and consequently, is improper where there is a tendency to apoplexy, or affections of the head[*]. Porter requires exercise, and should not be drank too new. It is doubtless more perfect, and more digestible, when moderately stale[†].

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* See Swan's Sydenham, p. 590.

† Venner's Via Recta ad Longam Vitam, p. 39.

‡ The celebrated Dr. Franklin, at the same time, observes that the bodily strength furnished by beer, can only be in proportion to the solid part of the barley dissolved in the water of which the beer was composed; and that, as there is a larger proportion of flour in a penny loaf, than in a pint of beer, consequently, that more strength is derived from a penny loaf and a pint of water, than from a pint of beer. As a proof of the justness of this doctrine, Doctor Franklin states, that when he was a printer in London, though he drank nothing but water, yet he was the strongest of fifty workmen, all of whom drank beer, and one of them to the extent of six pints in the day.—*Franklin's Life, written by himself*, p. 119 and 120.

§ In a work, entitled, Every Man his own Brewer, by Samuel Child, there is an account of the ingredients used in making porter, and the proportion and expence of each; but it is hardly possible that all these ingredients, more especially the more pernicious articles, can be essential in making porter. Some of them, as the coculus indicus, &c. are prohibited to be used by law.—Accordingly, in a practical treatise on brewing, printed anno 1804, it is asserted, that, in addition to water, malt, and hops, no-

The liquor called *ale* was originally made in England of malt, barley, and yeast, alone. We are told by one of the oldest English writers on medical subjects, (Andrew Borde), that those who put in any other ingredient, sophisticated the labour. It should never be drank under five days old. "It is," he says, "the natural drink of an Englishman, but beer, on the other hand, which is made of malt, hops, and water, is the natural drink of a Dutchman, and of late is much used in England, to the great detriment of many Englishmen[‡]."

There was formerly a strong prejudice against hops in England, and they were for a long time considered as pernicious weeds. But they seem, on the whole, to be an useful addition to malt liquors. Without hops, or some such ingredient, we must always drink our malt liquors, either new and ropy, or old and sour; hops also are useful, for the purpose of making the liquor light and well flavoured; and without that ingredient, malt liquor would possess a clammy sweetness, or would soon turn sour and vapid. It is the hops that preserve malt liquor, strengthen the stomach, and dissolve the viscid phlegm. The addition of hops has a tendency to prevent flatulence and diarrhœa, which is apt to occur where they are not used. Indeed, hops are not only of use, for enabling malt liquors to be kept to a proper age, but, by some authors have been strongly recommended for their medicinal virtues, possessing grateful bitterness, being agreeable to the stomach, and serviceable to digestion[§].

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thing else is necessary, to make good porter, but liquorice root, Spanish liquorice, and coarse brown mixed sugar or treacle. Porter is made of high dried malt, or of malt burned with brushwood; the hops are generally of an inferior quality to that employed in making ale.

[*] Practical Synopsis of the Materia Alimentaria, vol. i. p, 103.

[†] Economy of Health, or a Medical Essay, p. 39.

[‡] See Aitken's Biographical Memoirs of Medicine in Great Britain, p 58. In the same work, notice is taken of an old practice in England, of drinking a large daught of ale, the first thing in the morning, for the benefit of the eyes, which is justly reprobated.

Hart, in his Diet of the Diseased, p. 125, also states, that ale was brewed without hops. But probably wormwood, ground ivy, or some other bitter was mixed with it.

[§] Curtis's Essay on the Preservation and Recovery of Health, p. 69.

According to Sydenham, small beer brewed with hops, ought to be preferred to that which has none, though unhopped small beer is smoother and softer.

It is not to be wondered at, therefore, that even ale, should at last be brewed with hops; but having a less quantity of that ingredient, it lies heavier on the stomach; hence, more attention ought to be paid to its age and fineness before it is made use of.

Formerly, in order to have their ale properly prepared, it was directed, that the liquor in which the malt is infused, should not be boiled, but the water made boiling hot; nor should the hops be put into boiling water. In that way, only the finest and most valuable parts, both of the malt and of the hops were extracted. It is by using too hot water in brewing, that the wort, or extract, is more abundant, but coarser; and though boiling it afterwards makes the liquor keep longer, it is not so wholesome[*].

The best ale is now made from fine pale malt[†], and with hops of the finest quality; it is more nutritious than porter, as the malt used in the manufacture is unburnt, and as it is a stronger extract of malt.

The best ales, owing to their imperfect fermentation, are heavier than porter, and are improper for weak stomachs[‡]. They ought therefore to be taken, only in small quantities, by valetudinary, sedentary, studious, or contemplative people. At the same time, good ale, well fermented, and not too hoppy, may prove as beneficial towards a good chylifaction, as an equal share of wine; but it equally requires moderation.

Ale should sparkle in a glass, but the smaller the bubbles the better.

It is observed, that new ale is the most nutritive; hence tipplers of that liquor may be said, with Boniface, to eat, as well as to drink their ale.

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[*] Tryon's Way to Health, p. 116.

[†] When the malt is slenderly dried, the ale is *pale*; or *brown*, when the malt is more roasted; or *amber*, when the two sorts of malt are mixed together.

[‡] Falk's Guardian of Health, p. 148.

Dr. Cheyne remarks, that a weak stomach can as readily, and with less pain, digest pork and pease soup, as Yorkshire or Nottingham ale. They make, he says, excellent bird-lime; and, when simmered some time over a gentle fire, make the most sticking and the best plaster for old strains that can be contrived.—*Cheyne's Essay on Health*, p. 60.

His antagonist, Strother, observes in reply, that all farinaceous substances will do the same.—*Strother on Health*, p. 72.

Purl is a kind of medicated malt liquor, in which wormwood and other aromatic bitters are infused. It is not much in use at present, and is reckoned very unwholesome. Drinkers of purl are peculiarly liable to apoplexy and palsy[*].

Mum is properly a German liquor. It is made of several sorts of grain, in the following proportions: To seven bushels of wheaten malt, add one bushel of oatmeal, one bushel of ground beans, and a variety of other articles, as the tops of fir, wild thyme, &c. &c. also ten new-laid eggs. The whole ought to be infused in sixty-three gallons of water boiled down to forty-one. The English mode of making this sort of liquor differs considerably. But, on the whole, it is not to be accounted a wholesome beverage.

The arguments in favour of this species of liquid food, in general, are next to be considered.

Malt liquors form the real wine of this country; and if properly fermented, and well hopped, they are both nourishing and wholesome[†]. Indeed they often make up for the scarcity and coarseness of the meal.

Different sorts of malt liquors are used for different purposes. Small beer, if made from the first of the malt, with a moderate proportion of hops, and not kept too long, is an useful drink at meals, as a diluent; and the stronger sorts, as beer, ale, and porter, provided they be not too strong, are wholesome, refreshing, and strengthening drinks; but are of so nutritious a nature, that they are better calculated for persons who lead a busy, active, and laborious life, than for the indolent and nervous.

It is a common observation, that those who drink malt liquors, are stronger than those who drink wine[‡]; and to those who are trained to boxing, and other athletic exercises, old home-brewed beer is particularly recommended, drawn from the cask, and not bottled.

Malt liquors have also been found of service, as a medicine, in the typhus fever, and other disorders. Two or three English pints of strong beer have been given in a day for the typhus; and the feelings of the sick were the best proofs of its effects. They all agreed, that it did them more good than any thing. It has also been found, that bottled porter is one of the best ingredients in the diet of convalescent sailors or soldiers, and never failed to strengthen them quickly for duty[*].

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[*] Trotter on Drunkenness, p, 38, 39. [†] Turnbull's Medical Works, p. 105.

[‡] Hence the superior *bottom* of the British soldiery.

Among other advantages that malt liquors have over wine, are the following: That they can be made at various seasons of the year, and not merely at one annual vintage; that they are of a more laxative nature; that they may be used with advantage at sea, against that great enemy of the mariner, the scurvy; and they have over plain water this superiority, that the water thus taken is boiled, and hence freed from many noxious ingredients which may be found in plain water, but which, being mixed with the dregs of the malt liquor, and thrown away, are thus excluded from the body.

So much are those accustomed to this liquor, impressed with these ideas, that Jackson, the celebrated trainer, affirms, if any person accustomed to drink wine, would but try malt liquor for a month, he would find himself so much the better for it, that he would soon take to the one, and abandon the other.

4. This species of drink, however, has many objections urged against it.

Galen and Dioscorides, two celebrated ancient physicians, condemn malt liquors as unwholesome[†]. But it is probable, that in ancient times, and in the countries in which they lived, they were not much acquainted with the art of preparing such liquors in the best manner.

It is objected to the use of those liquors, that they have a tendency to produce corpulency; and it cannot be denied, that strong ale or beer, when taken in great quantities, without a sufficient proportion of exercise, must render a man fat and unwieldy[‡]. Without labour or exercise also, that excess of nourishment, which malt liquors contain, produces heaviness and torpor of mind; and the drinkers thereof are duller, and more phlegmatic, than those who confine themselves to the use of wine, and their understandings become enfeebled.

Thick beer is highly improper for those who are afflicted with the gravel; and malt liquors are said to breed the

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[*] Trotter's Medicina Nautica, vol. i. p. 293.

[†] Galen, lib. vi. Sump. Medic. Dios. lib. ii. cap. 80, and 82. Malt liquors are called by this author, Zythum et Curmi.

[‡] The drinking of beer absolutely requires exercise; and it is known, that a person, who used to drink three English quarts of porter a-day, without exercise, constantly applying his mind at the same time; from excess of study, and the porter he took, he brought on an obstinate diabetes.—*Valangin on Diet*, p. 131.

It is, therefore, sometimes apt to disorder the stomach by a slight fermentation afterwards in the body,—a process, that persons of weak digestive organs cannot suffer without much pain[*].

Malt liquors, on the whole, being so well calculated for the people of this country, it is a most unfortunate circumstance, that the pressure of taxation should prevent their being made so agreeable and so wholesome a beverage as formerly. Owing to the great heats which the brewers, since 1804, have been obliged to use, in order to get a greater quantity of extract, we rarely meet with pure and mild, but strong malt liquor, except in the houses of private families. There we may still sometimes partake of that *real barley wine*, that was formerly the boast of these kingdoms.

6. *Spruce Beer.*—This article is made from a decoction of the spruce fir. It is a powerful diuretic and antiscorbutic; but it is too cold for some constitutions. Containing a large quantity of fixed air, it is highly refreshing in summer, and sits easy on the most debilitated stomach; but, from its peculiar flavour, it is disagreeable to the taste of many.

Spruce beer does not require any malt liquor to be mixed with it, as some imagine, from its name[†].

7. *Honey Liquors.*—That useful article honey, is not only of importance as food, but is also extremely valuable, from the liquors which may be made from it. These are commonly known under three names,—1. Hydromel; 2. Mead; and, 3. Metheglin.

Hydromel is made by boiling honey with water, and the addition of aromatics, as cinnamon, ginger, nutmegs, and cloves, without subjecting it to fermentation; consequently, it does not, strictly speaking, come under the head of fermented liquors, but it was not worth while to separate it from the other sorts of liquids made with honey. It may be used as table-beer for common drink.

Mead is made in the same manner, but is subjected to fermentation, by the addition of yeast, whence it obtains a vinous quality. When kept to a proper age, it becomes clear, fine, and has a pleasant taste. It is considered as particularly useful in nervous cases, being a powerful cordial, and approaching, in its nature, to the wines of Spain and Portugal; though it differs from them in possessing, along with its stimulant, a nourishing quality. It forms, therefore, the most proper drink for the aged and infirm; and is also peculiarly well suited to the winter season.—With many constitutions, however, honey itself disagrees, occasioning uneasiness of the stomach, and bowel complaints; wherever that is the case, mead forms an improper beverage. Even when it does agree, it should never be drank till it is fine, as it contains more viscid particles than other vinous liquors, all which should be fully deposited before it is tasted.

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[*] Trotter's Essay on Drunkenness, p. 38.

[†] The following is one mode of making it.—Take of water, 16 gallons, and boil the half of it; put the water thus boiled, while in full heat, to the reserved cold part, which should be previously put into a barrel or other vessel; then add 16 pounds of treacle or molasses, with a few table spoonfuls of the essence of spruce, stirring the whole well together; add half a pint of yeast, and keep it in a temperate situation, with the bung-hole open, for two days, till the fermentation be abated. Then close it up, or bottle it off, and it will be fit for being drank in a few days afterwards. It is a powerful antiscorbutic, and very useful in long voyages; and, by means of the essence, it can be prepared with little difficulty, in places where the spruce fir itself cannot be got.

The difference between mead and metheglin, principally arises from the proportion of honey in each. Mead consists of one part honey, and four times as much pure water; whereas metheglin contains only two parts of water to one of honey. Besides the aromatics used in mead, certain herbs, as rosemary, hyssop, thyme, and sage, are also mixed with it; metheglin is said to be a liquor exceeding wholesome in the winter season, more especially for old people; having a singular property of heating the body, and removing phlegm; but it must not be taken new, and requires to be thoroughly fined[*].

Liquors made of honey, are prepared in the greatest possible perfection in Poland; in particular, that sort known there under the name of *Lipets*. It is clear, and sparkles like champaign, and by many is thought superior to that far-famed liquor, both in strength and flavour. The honey in Poland is, in some districts, particularly Lithuania, of an uncommon good quality, which may account for the excellence of the article manufactured from it.

4. *Distilled or Ardent Spirits.*

The last, and undoubtedly the most fatal discovery, in the art of making liquor for the use of man, is that of ardent spirits; an invention which, it were to be wished, had never been made, from the various pernicious consequences which have resulted from it. In some particular cases, spirituous liquors may be of use in medicine, and sometimes even in diet; but Haller is disposed to include them among the poisonous, rather than the useful liquids[*].

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[*] Venner's Via Recta ad Vitam Longam, p. 44. Dr. Falk, in his Guardian of Health,' p. 147, says, that well-made metheglin is the most generous drink in nature, suited to our climate. It may be proper to add, on the authority of an intelligent friend, that by filling a jar with honey, and hanging it in a vessel, kept full of boiling water, for two or three hours, and skimming off the wax, and whatever else is thrown up, a pure kind of honey, or sugar of honey, may be obtained, which any person may eat, to whom honey either drained, or in the comb, is disagreeable. This has often been useful to such persons in obstinate coughs.

It is supposed, that the art of procuring ardent spirits by distillation, was a discovery of the Arabian chemists. They obtained it from rice, whence it took its name of *arrack*. At present, it is generally procured by the distillation of fermented liquors. In France, it is drawn from wine, cyder, and perry. In England, and in Germany, from malt liquors; and, in this country, and the West India islands, from sugar and molasses. Ardent spirits, from whatever substance they are obtained, are found, if freed from their volatile oil, to be essentially the same. By repeated distillations, they are more completely purified, and then they obtain the Arabic name of *alcohol*[†].

There is very little difference between one spirit and another in their effects, if properly distilled, though there is a variety in regard to their taste and flavour. This subject, however, has been frequently discussed, owing to the interested views of the dealers in spirits. Those who imported brandy, took care to trump forth the virtues of that article; whilst the West India merchants and planters, on the other hand, thought it necessary to publish a defence of the superior qualities of rum [‡]. In general, however, it has been remarked, that brandy is the most bracing and stomachic, and the best calculated for medicinal purposes, for instance, in the preparation of tinctures, &c. Gin and whisky, or malt spirits in general, are the most diuretic and sudorific; and, when properly prepared, are the best calculated for internal use in cold and damp weather. Rum and arrack are the most styptic and heating; and the most likely to occasion complaints in the head, more especially if taken to excess[*].

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[*] Physiol. vol. vi. p. 251. The pernicious effects of spirits upon horses, have been very accurately ascertained, by the experiments of Pelger; and, indeed, they proved to be as injurious, as various poisons tried at the same time. See Beddoes's Hygeia, vol. ii. Essay viii. p. 26.

[†] In the *Annales de Chymie* for July 1806, (tom. 95), there is a report regarding spirits, considered as a drink for the use of troops, by the celebrated Parmentier. The object of this report was, to ascertain whether *brandy*, (l'eau de vie), *or pure spirits of wine*, (alcohol), is the fittest for the use of troops. The result of the report is, that it is most for the advantage of the government, and of the soldier, to distribute the natural spirituous liquors of the country, than spirits of wine; or, in other words, to give brandy in the wine countries; spirits made from cyder, and perry, in Normandy; and made of corn, in Belgium and Holland.

[‡] See an Essay on Spirituous Liquors, with regard to their effects on Health, in which the comparative wholesomeness of rum and brandy are particularly considered, by R. Dossie, Esq.

The qualities of all these different sorts of spirits are much improved by long keeping; and, indeed, I have tasted whisky above forty years of age, which had thereby obtained the softest and most balsamic qualities; and brandy, that had been kept in a cask for above fifty years, had its quality thereby materially improved.

In a medical point of view, spirits have some advantages: When taken judiciously, they are of considerable service in preventing the bad effects of a moist and cold atmosphere, of pestilential vapours, of very unclean occupations, of a damp military camp, and, occasionally, too, of a temporary abstinence of food. They are also of use in making a number of medicinal preparations, as elixirs, tinctures, essences, &c.; and when applied *outwardly*, great benefit is derived from them, in preventing the bad effects of cold and damp, and restoring warmth and circulation. But the bad effects of habitual dram-drinking, as summed up by Haller, greatly overbalance these advantages[‡].

Spirits are principally of use in three cases; 1. As a cordial, when the body has been suddenly exhausted of its strength, and a disposition to fainting has been induced. 2, When the body has been exposed for a long time to wet weather, more especially if it be combined with cold. Here a moderate quantity of spirits is not only safe, but may be of use to obviate debility: And, 3. In those calamitous cases, when any exercise that can be obtained is insufficient for resisting cold, wet, &c. Thus we find, in the instance of the men who were in the boat with captain Bligh, after the mutiny, exposed, for nearly a month, to cold, wet, and hunger, what a powerful effect even one tea-spoonful of rum daily had, in fortifying them against such hardships*. As to spirits being useful in warm weather, the most general opinion is, that whether used moderately, or in excessive quantities, they diminish the strength of the body, render men more susceptible of disease, and unfit for any service in which great vigour or activity is required†.

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[*] Practical Synopsis of the Materia Alimentaria, vol. i. p. 106. The intoxication produced by brandy is more lively and furious, and that from rum more stupid and beastly.

[†] It is a custom, he observes, which, if persevered in, contracts the stomach itself, and the passage from the stomach into the intestines. It also renders the fibres of the stomach callous and fragile, and insensible to every stimulus, even that of hunger. It contracts the diameter of the vascular system in general. It narrows the air vessels of the lungs, even to a third of their former size. It tends to coagulate all the humours of the body, the aqueous excepted. It produces ossifications of the tendons and arteries, and, in some instances, of the pleura itself, and often brings on schirrus of the whole viscera and glandular system. It induces also tumours, convulsions, and palsy of the nervous system.—Vide Haller's Physiol. lib. xix. sect. 8.

Formerly, a variety of cordials were kept in private families, and in the apothecaries' shops, which were not more medicinal than plain rum or brandy; but now that absurd practice is less frequent, even with the few Lady Bountifuls of the present generation, whose predecessors wasted much time and money, in distilling their closet cordials, and in poisoning their families, and half their neighbours, by dispensing them‡.

There can be no doubt, that many persons have to date their first propensity to drinking, to the too frequent use of spirituous tinctures, as medicines, rashly prescribed for hypochondriacal complaints. There are patients who are continually craving after medical novelties, or quack medicines, and who are in the practice of taking every article that is warming and cordial.

It is a custom, not uncommon in some families, but particularly at feasts and entertainments, to hand cordials round in the time of dinner, though it is contrary to all the rules of temperance§. It is deceiving the unwary; for, I am sure, there are many who drink *liqueurs*, who would blush to taste brandy undisguised. Many of these cordials are impregnated with narcotic substances, which add to the noxious qualities of the spirit. Indeed, there is hardly any ingredient infused with spirits‖, water alone excepted, that does not render them more pernicious.

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* Code of Health, 2d edit. vol ii. p. 40, note.

† Rush's Inquiry, p. 17. Yet, I understand, it is remarked, that those men who saw wood in the burning streets of Florence, in the summer season, will often drink brandy to allay their thirst, rather than their weak pleasant wines.

‡ Adair's Essay on Diet and Regimen, p. 52.

§ Not only after the dessert, but also about the middle of dinner, it is not unusual at French dinners, to have a glass of Jamaica rum, wormwood wine, or that of Vermouth, handed round, for the purpose of restoring the appetite to its original vigour. After the dessert coffee and *liqueurs* are generally served. See Pinkerton's Recollections of Paris, vol. ii. p. 207.

‖ What is called ratafia, ought to be particularly avoided. It is made by infusing in the spirits the kernels of apricots, or bitter almonds, or even laurel leaf. Such a mixture must be particularly unwholesome.

These liqueurs are fortunately less used in Great Britain than on the Continent. They are more insidiously dangerous, as they are very palatable. Many persons, of worthy and respectable characters, have been insensibly and unconsciously led into the fatal habit of tippling, by a frequent use of closet-cordials and liqueurs*.

A respectable American physician (Dr. Rush), has written a short, but valuable treatise on this subject, which ought to be reprinted, and circulated in this country. He there considers the effects of ardent spirits, as they appear in a fit of drunkenness; the chronic effects of their habitual use upon the body; their influence upon the mind; and their effects upon the property of those who are addicted to the use of them; forming altogether a mass or combination of calamity, which would stagger the most habitual drunkard. It may be proper to observe, that in training men for athletic exercises, spirits are never allowed, on any consideration whatever, not even with water.

So pernicious is the use of spirits, that it has been often recommended to Parliament, totally to prohibit the manufacture of them. But laws cannot arrest the progress of luxury, and even if the manufacture were to be prohibited in Britain, they would be imported from other countries†.

Spirits and Water.—However dangerous the occasional taking of spirits unmixed has been accounted, yet *the constant use of them with water,* is perhaps a more fatal practice; for the person who has got into this habit, continues always to increase the proportion of spirits, until at last it will equal, if not exceed that of the water, and it becomes hardly possible to renounce a habit, to which the stomach has been long accustomed.

A respectable physician, (Dr. Falconer), has written an interesling tract, in which this subject is particularly discussed. He observes, that some medical men have unfortunately been led, to give a most exceptionable direction with respect to diet, that of substituting brandy, or rum, diluted with water, for common drink; and it is not only prescribed in extraordinary cases, as a temporary expedient, but is frequently directed, in almost all cases of any weakness in the stomach, or digestive organs, *as a perpetual article of diet*. He justly adds, that no circumstance ever occurred in medicine, more injurious to the science, or fatal to mankind, than this unfortunate piece of advice. It recommends an odious and insidious practice, which cannot be too strongly reprobated.

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* Adair's Medical Cautions, p. 250.

† An intelligent correspondent has proposed it as a most desirable regulation, that spirituous liquors should be permitted to be sold *undiluted*, by none but the apothecaries, and then only to patients, in small quantities. It would answer every purpose of utility, and save many lives, if the merchants were only allowed to sell them at half the strength, or rather one-third the strength of proof-spirit, that is, about the strength of strong grog.

Such a custom is apt to produce, in a great measure, all the bad effects of habitual dram-drinking. The use of spirits in this way, is the more dangerous, as being more delusive; and is the more apt to be indulged in, as being sometimes recommended by the faculty. Besides, the consequences of an excess, are not so immediately ascribed to their true cause, as in case of habitual dram-drinking, and of course not so likely to be guarded against.

It is said, that the mixture may be exactly proportioned, in point of strength, to malt drink, or any other liquor to which we have been accustomed; but though spirits may be diluted to a proportionable strength, they cannot be equally innocent with those liquors[*]. They are evidently more inflammatory, and consequently, are more apt to produce complaints in the liver, and other disorders.

It is contended, that spirits may be procured every where in tolerable perfection, and nearly the same in point of quality, which is not the case with wine and malt liquors. Were this admitted, it could only justify a partial and occasional use of the mixture.

It is also said, that spirits and water are incapable of either the vinous or acetous fermentation, and that it also checks those fermentations in other substances; hence that it must be highly serviceable in cases where the stomach is apt to be troubled on that account. But this cannot be admitted. The presence of air in the intestines is, to a certain extent, necessary and useful, and serves important purposes in the animal economy. By guarding too much, therefore, against flatulence in our food, we are apt to bring on a costive habit, the source of innumerable disorders, and a habit which spirits and water has a peculiar tendency to occasion or to aggravate.

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[*] It is universally found, that the constitutions of those who indulge in the use of wine or malt liquors, are more robust than those who use spirituous liquors, diluted with water.

It is also said, that this kind of liquor is taken, without inconvenience, by the inhabitants of our West India islands, and by our seamen. But this arises in a great measure from necessity. In regard to the West Indians, they generally mix their spirits and water with sugar, and some acid fruit, which corrects the heating and noxious qualities of the spirit; and they live more on vegetable diet, than those generally do to whom that sort of liquor is recommended in Great Britain[*]. Besides, the state of health enjoyed by the inhabitants of the West Indies, where they are so subject to cramps, palsies, consumptions, and other disorders, furnishes no argument for using that beverage in this country. As to our seamen, it is well known, that, whenever it can easily be got, beer is given them in preference.

An account of a case connected with this subject, is given by Dr. Valangin, which ought to be generally known. A respectable lawyer, through custom, more than choice, had got into the too fashionable mode of drinking brandy and water, which destroyed the balsamic qualities of his blood, depraved his appetite, depressed his spirits, and dried up his nerves to such a degree, that he could hardly support himself, without having daily recourse to the same liquor, till a severe fit of the gout, attended with a train of nervous and spasmodic complaints, was very near destroying him. But, by the advice of his physician, he was prevailed upon to renounce this unfortunate habit, and derived much benefit from the change[†].

Punch.—No species of liquor has been more condemned[‡], or more loudly celebrated than punch. This drink consists of spirits diluted with water, and a certain proportion of acid and sugar, making a mixture of substances very opposite in their nature, being strong and weak, sweet and sour. Some contend, that half a pint of old strong beer, in a moderate bowl of punch, will mellow the fire of the spirit considerably, or that half a pint of green tea is an useful additional ingredient. Where the acid does not disagree with the stomach, punch is certainly wholesomer than *grog*, (or spirits and water), or *toddy*, (which is grog with the addition of sugar)[*]. When punch is made in perfection, the water should be thoroughly boiled, the sugar, the water, and fruit, should be well mixed before the spirits are put in, and the fruit used should be ripe and generous.

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[*] This subject is more fully discussed in Dr. Falconer's Observations on some of the Articles of Diet and Regimen usually recommended to Valetudinarians, p. 43, &c.——It is said, that the late Dr. Fothergill, who was among the first that sanctioned this practice, declared, some time before his death, that he repented of having done so, from the unfortunate habit some persons had acquired from it.—*Adair's Medical Cautions*, 2d edition, p. 345.

[†] Valangin on Diet, p. 140.

[‡] Cheyne, in his Essay on Health, p. *55*, says, That, next to drams, no liquor deserves to be more STIGMATIZED, and banished the repasts of the tender, valetudinary, and studious, than punch. It is a composition of such parts, as not one of them is salutary or kindly to such constitutions, except the pure element in it.

SECT. III. *Of the Rules to be observed, as to the Consumption of Liquors, in regard to Time and Quantity.*

THE necessity and uses of liquid food having been already explained, and some account having thus been given of the different kinds of liquids commonly made use of, the only other point that remains to be considered is, the rules that ought to be observed in regard to the consumption thereof.

The points to be considered under this general head, are,—1. The total quantity of liquid food that ought to be taken in a day. 2. At what times that quantity should be taken. 3. Whether in a hot or a cold state. 4. What diluent is the best calculated for digestion: And, 5. What miscellaneous rules ought to be observed in regard to drinking.

1. Some advise those persons whose stomachs are weak, and digestion imperfect, to take their food as dry as possible, or to drink as little as they can of any liquid with their meat. But where this restriction is attempted, it is apt to produce, or to increase, a costive habit, the source of so many disorders[†].

It must be admitted, that, in general, we drink too much, and thereby weaken the activity of our digestive powers[‡]; but there are some persons, on the other hand, who drink little at meals, and rarely at any other time. We are told of one young man in particular, who, for a considerable space of time, had not drank with his meat, in consequence of which, he had a very florid complexion, and a scorbutic eruption all over his body. It thence was evident, that there was too great a proportion of the red part of the blood to the serum; and he was freed from the eruption, merely by drinking with his meat, without any other remedy[*].

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[*] It is remarked, that the drinkers of toddy get sooner intoxicated than those who drink punch.

[†] Falconer's Observations on some of the Articles of Diet and Regimen, p. 14.

[‡] The trainers to athletic exercises remark, that drinking much swells the belly, is bad for the wind, and encourages soft unhealthy flesh.

It is asserted, that some coal-heavers and porters in London, will consume four gallons of ale or porter in the space of twenty-four hours. This quantity could not be long continued. A marine, in a king's ship, was accustomed to drink four gallons of beer in the day; but he soon grew bloated and stupid, and died of an apoplexy[†].

The proper proportions between the two sorts of food, are thus stated by an intelligent physician. If we suppose the whole weight of solid food, in twenty-four hours, to be a pound and an half, then double that quantity, or three pounds of liquor, one pound to consist either of milk, or of some strong liquor, and two of some aqueous fluid, will, on a medium, be sufficient to dilute the solid food abundantly. A larger quantity, he observes, would but distend the vessels, and carry off the finer parts of the chyle by water, or perspiration, which are constantly and necessarily increased by an over dose of fluids. A less quantity than what is above stated, would not sufficiently dilute the food, or preserve the blood in a state of fluidity[‡].

Some will object to the smallness of the proportion; but it is to be observed, that three pints *per* day is all the quantity allowed to boxers, when trained to athletic exercises[§], and, consequently, is sufficient for the acquirement and the preservation of strength in this climate. Three pounds, however, would be found too small in hot countries, or in cases where the individual is obliged to undergo great labour, and, consequently, where the perspiration must be abundantly supplied[*].

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[*] Robinson's Dissertations on the Food and Discharges of Human Bodies, p. 65. In the Medical Transactions, vol. ii. No. XIX. p. 275, there is an account given of Mr. Thomas Wood, a miller of Billericay, in Essex, which has been already alluded to; but this was a particular case, with a view of reducing corpulency.

[†] Trotter's Essay on Drunkenness, p. 157.

[‡] Cheyne's Essay on Health, p. 68.

[§] The ancient athletæ were allowed a very small quantity of fluid; and this *dry diet*, as it was called, seems to have constituted an essential part of their regimen. See Dr. Buchan's Letter, in the Code of Health, 2d edit. vol. ii. Appendix.

Others will object to the proportion of only two to one. But it appears, from Robinson's Dissertation on the food and discharges of human bodies, that this is the medium rate of those, who have tried accurate experiments with liquid and solid food.

Many people suppose, that it is of little consequence what quantities of liquids they take, being so easily digested; but this is a mistake, for wine, and other strong drinks, are as hard to digest, and require nearly as much labour of the concoctive powers, as solid and strong food itself. Nay, it is proper to observe, that such liquors, by their heat and activity, hurry the food unconcocted into the habit of the body, and by that means lay a foundation for fevers, colicks, gout, and several chronical distempers[†]. This proves the advantage of having them properly diluted.

As to quantity, it is justly observed by Arbuthnot, that the great secret of health is, keeping the fluids in due proportion to the capacity and strength of the channels through which they pass. But the danger is less, when the quantity of the fluid is too small, than when it is great. For a smaller quantity of fluid will pass, where a larger cannot, but not contrarywise[‡]. Hence it appears, how essential it is to avoid excess in quantity, and that it is better to be rather under, than over the mark.

2. It is recommended, as a good general rule, to drink when one is thirsty, as thirst denotes the want of liquid nourishment; but it is a much better system, unless in very particular circumstances, to drink only with solid food, and never on an empty stomach, or after long fasting.

In ancient times, it was considered to be an useful practice, to take, between meals, a large draught of white or Rhenish wine, or stale beer, in order, as it was said, to wash and cleanse out of the stomach the relics of the food that had formerly been eaten, and to promote the distribution of the chyle[§]. But this habit is now given up. The ancient customs also, of drinking fasting, both morning and evening, and of taking a posset, just at going to bed, are all happily exploded.

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[*] Smith, the celebrated Yorkshire trainer, recommended from three to four pints of good old ale, with a toast, to be taken at different times in the course of the day. In regard to wine, in cases of diarrhœa, he allowed a few glasses of red port *per* day; and, for three or four days previous to the conclusion of the training, a gill *per* day of mountain wine to be taken at twice.

[†] Lynch's Guide to Health, p. 225.

[‡] Arbuthnot on Aliment, p. 167.

[§] Venner's Via Recta ad Vitam Longam, p. 192.

The quantity of liquid food, at the three great meals of breakfast, dinner, and supper, ought to be nearly the same; but more at dinner, than either at supper or breakfast.

It is a good rule, to drink little and often at meals, rather than a great draught at once; and hence the modern custom of using small glasses, is better than the old one of drinking out of large tankards, which tempted many to take a greater quantity of drink than was necessary.

The meals ought to be as regular as possible. The stomach thus gets into the habit of expecting food at a stated hour, and will be better prepared to digest it. The irregularity of the meals in London, has been long considered a very material disadvantage to those who are exposed to it.

It is much disputed, whether drinking wine in time of dinner, ought to be practised in this country. Dr. Trotter calls it *downright pampering*, and contends, that it vitiates the taste and healthful appetite*. On the other hand, it is asserted, that one or two glasses may be taken during dinner, even by those who have not reached their fortieth year, not only with impunity, but even with advantage, provided the allowance after dinner is proportionally abridged†.

When men are trained to athletic exercises, they are directed not to take their liquor in great draughts, but by mouthfuls at a time, by which the quantity will quench the thirst better than if taken at once. It is probable, by following this rule, that they are enabled to do with a very small proportion of liquid food.

It is a question, whether it is better to take one or two kinds of liquor, or a variety. In England, excepting in very opulent families, you will seldom meet with above two or three kinds of wine, unless when a great entertainment is given; whereas in France, there is great variety, having different and peculiar flavours, more or less acceptable to the stomach, at particular times, and with various aliments‡. Unless where this system, however, is perfectly understood, a variety of liquors ought to be avoided.

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* Essay on Drunkenness, p. 166.

† See the Edinburgh Medical and Surgical Journal, for 1805, p. 78.

‡ Pinkerton's Recollections of Paris, vol. ii. p. 205, where there is also a list of the various wines commonly used in France. It is observed, p. 98, that the wine called *chablis*, is particularly well calculated to accompany oysters.

It is much disputed, whether drink ought principally to be taken with solid food, or after it; the French adopting the one practice, and the English and Germans the other. Of the two, the French mode is certainly preferable, for it is very difficult, unless where regularity is punctually enforced, to rise from table, after having seriously sat down, to the bottle alone. The best rule is, to give up drinking with the dessert.

The idea of quitting table with the dessert, is objected to in England, from the supposed impossibility of spending the evening with any degree of pleasure or comfort, except in the company of persons, whose conversation is enlivened by a cheerful glass. But this observation is only applicable to those, who have no resources in their own mind, no domestic society to associate with, no books they can take a pleasure in perusing, or no business with which they can be occupied. Besides, in large towns, there are generally public amusements, to which they can resort, for wasting that time that may hang heavy upon their hands*.

3. It is much controverted, whether liquids should be taken warm, or cold, or even iced, where that luxury can be obtained. It is a good general rule, to take them rather warm in cold weather, and either cold or iced in warm; but that system must be varied according to circumstances, and ought not to be carried to extremes.

It is well known, that the Chinese take all their liquids warm, grounding it on this idea, that, as the fluids of the body are warm, so should the liquids thrown into the stomach†. But, in this case, various particulars ought to be taken into consideration. Broths, and soups, and liquids mixed with nourishing substances, ought certainly to be taken warm; but in regard to those liquids which are taken at meals, merely as diluents to our daily food, the cooler they are, the better for the purpose of strengthening the stomach, and assisting digestion. If any liquid, however, is taken *between meals*, when the body is heated, with the view of quenching thirst, the liquor must either be warmed, or mixed with wine or spirits, otherwise the most fatal consequences may ensue.

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* An ingenious author has remarked, that nothing is more desirable than to establish a plan of social intercourse, independent of the pleasures of the bottle. The meeting should be made more promiscuous than our usual parties, by the introduction of boys and girls, at the age when they begin to use their reason, a plan that cannot be at present attempted, as it leads young people to the habit of drinking some glasses of wine daily, at too early a period of their life.—*Beddoes's Hygeia*, vol. ii. Essay viii. p. 40.

† Dolæus, in his Essay on the Gout, remarks, that he knew a gouty gentleman, who drank warm beer with great success for the gout; and the Chinese, who drink their water warm, are not subject to this distemper.

Taking liquids warm, promotes chylification, circulation, and, what is highly beneficial to health, perspiration*. Nothing, however, can be more pernicious than the practice of taking them very hot. It spoils the teeth, brings on the tooth-ach, weakens the head and eyes, ruins the stomach, and is attended with a variety of other mischievous effects.

The Asiatics, the Greeks, and Romans, usually drank their liquors cold; and they were taken warm only occasionally, and chiefly by valetudinarians, when it was enjoined by their physicians as a necessary part of their regimen. Seneca represents the drinking of wine diluted and warmed, as proper for a valetudinarian, but intolerable to the healthy or luxurious. Hippocrates enumerates the various bad effects arising from the continued abuse of warm diluting liquors; and the Rhodians, we are told, were remarkable for their pale and effeminate complexions, which they acquired from the excessive use of warm water†. The health of the Emperors Augustus and Claudius, enervated by the warm regimen, was restored by drinking their wine cold‡.

Not only did the ancients prefer their liquids cold, but they were also accustomed to take them after being immersed in snow, in which practice they have been imitated by some of the modern§. It appears, indeed, from repeated experience, that iced liquors are not only grateful and salutary in hot climates, but are often necessary to preserve health, by restraining and moderating profuse sweats, (which deprive the blood of its finer parts), and to make the other discharges and secretions more regular. Such liquors, however, are particularly dangerous to persons who have been previously heated by exercise; and are improper in advanced age, or in the colder seasons of the year‖.

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* Falk's Guardian of Health, vol. i. p. 153.—Camper, on the other hand, remarks, that a great quantity of tepid or warm liquor, must do more harm than the ingredients can do good. It weakens the stomach, and injures the concoction of the food.

† It is singular, that the same remark may be made of the Chinese.

‡ Barry on the Wines of the Ancients, p. 154, 155. The ancients were of opinion, that heated wine inebriated much sooner than cold wine.

§ Some also cool their wines by evaporation, a modern practice, derived from the East Indies.

‖ Barry on the Wines of the Ancients, p. 172. Ramazzini strongly inculcates the same doctrine.

4. The next point to be considered is, what diluent is best calculated for digestion? That is a point difficult to ascertain, as any experiment out of the body can give us but little information regarding the processes which take place in the living stomach. The following experiment, however, may be worth recording:—The same quantity, of the same sort of meat, was put into four distinct glazed vessels, with a like quantity of *water* in the one, *malt ale* in another, *white wine* in a third, and *claret* in a fourth; and after some hours of cold maceration, and frequent stirring of each alike, the water and ale mixtures were the most changed, being somewhat softened, and as it were mucilaginous, (if either had the advantage, it was the malt ale), the white wine was less changed than both, and the other with claret was scarcely changed at all, unless to a greater hardness. The vessels, being afterwards closely covered, were put on a gentle fire, and kept, as nearly as possible, in the same degree of warmth for several hours. The greatest advances towards a dissolution were still made in the two first, the third much short, and the fourth still less*. This experiment, so far as it goes, is certainly in favour of malt liquors and water, in preference to wine, and of white wines over the red.

5. The following miscellaneous observations are connected with rules for drinking.

It is a necessary rule to observe, that when persons are young and healthy, their drink should be water, or weak fermented liquors, but that the strength of their drink should increase as they advance in years.

Another rule to be observed is, that liquors, some degrees stronger, may be allowed in the winter, than in the summer, to keep up, and to strengthen the tone of the solids and vessels, under an increased quantity of their contained fluids, in consequence of diminished perspiration †.

Cadogan affirms, that whatever the advocates for a little wine every day, may argue in its favour, they are most undoubtedly in a very great error; and that it would be much better, and safer, to drink a bottle, and get a little merry, once a-week, and to drink water only, or small beer, at all other times; for, in the interval, nature might totally subdue the wine, and recover entirely from its effects ‡. A respectable physician, however, (Dr. Falconer), condemns this doctrine, as not likely to be of service to the cause of temperance. The habitual use of stimulants, he admits, is improper, and their effects wear out by custom; but he contends, that wine moderately taken is most necessary as an antiseptic, to qualify the putrefactive tendency which a large quantity of animal food is apt to create. He therefore recommends, in preference, the directions of Celsus, who advises a person in health to confine himself to no fixed rules; to avoid no kind of food commonly used; sometimes to be in company, and sometimes to estrange himself from it; sometimes to exceed a little in diet, and at others to live regularly*.

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* See Curtis's Essay on the Preservation of Health, p. 81.

† Those who use too much strong stomachic wines, however, to prevent wind, are seldom free from it, nor from all the other disorders of indigestion.

‡ Cadogan's Dissertation on the Gout, 6th edit. p. 61.

It is a custom, which almost universally prevails in the northern parts of Europe, to present a dram, or glass of *liqueur*, before sitting down to dinner. It answers the double purpose of a whet to the appetite, and an announcement that dinner is on the point of being served up. As the practice has continued so long, most probably it has been found to answer the first of these objects, or at least to do no harm; and the other has the convenience attached to it, of letting those of the company engaged at cards or billiards know, that they should stop, without beginning a new game or party. Along with the dram, is presented on a waiter, little square pieces of cheese, slices of cold tongue, and dried toast, accompanied with fresh caviar, &c.

A celebrated physician, when far advanced in life, found a similar stimulus necessary. After his dinner, which consisted chiefly of broths and fish, (as he could not eat animal food from the want of teeth), he drank a pint of port daily, and concluded with a wine glass filled with white sugar, and as much rum as it could hold; so that he had fully half a glass of spirit. The same dose was taken every morning about twelve o'clock; and if visiting at that hour, he was accustomed to call for it, as regularly as when he was at home. It was never understood that his health suffered from that practice. Taking a small quantity of spirits in this way, as a cordial, and a medicine, may be of use to old men; but it can never be necessary in youth, unless where persons give greater latitude to their appetites, than they ought to do.

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* Falconer's Observations on Cadogan's Dissertation on the Gout, p. 80.

CONCLUSION.

It may be proper to conclude this chapter with some observations on drinking to excess.

A French author has written an eulogium on drunkenness, in which he contends, that we ought to enjoy ourselves;—that wine excites joy;—that it is good for the health to be sometimes intoxicated, particularly for the old;—that wine gives spirits;—that it renders a man eloquent;—that it is the means of acquiring friends, and reconciling enemies;—that the custom of being intoxicated is extremely ancient,—and, that it is justified by the example of popes, philosophers, poets, men of letters, warriors, and statesmen. After going through these, and other topics, he concludes with the rules which ought to be observed in regard to drinking, of which the following is the substance.

1. The first and principal is, not to be intoxicated often; for which the authority of Seneca is quoted. 2. The second is, to give way to that custom only in good company, that is to say, with one's friends, and with persons of merit. 3. The third rule is, to drink nothing but the best wine, having five properties,—a good taste,—a good flavour,—a clear colour,—age,—fame, or the credit of coming from a country celebrated for its produce. 4. Drinking should only be indulged in at convenient times. 5. No person should be forced to drink, a species of compulsion which, in some countries, has been prohibited by special law. 6. But the last rule is the best, *not to push intoxication too far*[*].

It is impossible, however, to justify intoxication, however ingenious the arguments that may be urged in its behalf, even under the restrictions contained in these rules; for drinking to excess is a most detestable practice, the inlet to every vice; and the principal source of many of the most fatal disorders with which the human frame is afflicted[†].

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[*] See l'Eloge de l'Yvresse, one vol. 8vo. printed at Leyden, anno 1715. The rules in French are as follow:—"Regles qu'on doit garder en s'enyvrant. 1. Pas souvent. 2. En bonne compagnie. 3. Avec du bon vin. 4. En tems convenable. 5. Ne forcer personne à boire. 6. Ne pousser pas l'ivresse trop loin."

[†] We are told by M. Muret, that he had the curiosity to examine the register of deaths in one town, and to mark those whose deaths might be imputed to drunkenness; and he found the number so great, as to incline

It has been remarked, that vice is more ingenious than virtue, and has numerous stratagems, by which she attacks, and too often vanquishes her simplicity. Among these, the custom of pledging during meals, and drinking toasts afterwards, are certainly the most dangerous; being customs which seem to promote social intercourse, and are accounted marks of friendship*. Formerly, indeed, not only stratagems were used, but even compulsion. The case, however, is now greatly altered, even in countries, of old the most addicted to intemperance†.

Drunkenness prevails more in cold climates than in warm; physical causes may, in a great measure, explain this circumstance. Heat is one of the great supports of animal life; it bestows on the mental faculties cheerfulness and vivacity; and the inhabitants of hot countries are observed to be more gay and volatile, than those of the northern regions. As heat supplies abundant stimulus, the constitution needs less excitement from diet. But the shivering native of Lapland or Labrador, whose temperature of climate, for a great part of the year, descends beneath the freezing point, feels an unusual glow and animation from a spirituous potation, which he cannot obtain from his wintry skies. His atmosphere thus conspires to make him a drunkard, because when he first tastes a beverage that imparts cheerfulness and strength, he is not aware, that it is the first step to a course of indulgence that must ultimately impair his health, and injure the understanding. Dr. Falconer, in his essay on climate, says, "If we go from the equator to the north pole, we shall find this vice increasing together with a degree of latitude. If we go from the equator to the south pole, we shall find drunkenness travelling

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him to believe, that hard drinking kills more of mankind, than pleurisies and fevers, and all the most malignant distempers.—*Price on Reversionary Payments*, vol. ii. p. 250.

* Pinkerton's Recollections of Paris, vol. ii. p. 349.—Regarding toasts, Camden in his Annals, under the year 1581, has the following remarkable observation:—"The English, who hitherto had, of all the northern nations, shewn themselves least addicted to immoderate drinking, and were commended for their sobriety, first learned, in these wars in the Netherlands, to swallow large quantities of intoxicating liquors, and to destroy their own health, by drinking that of others." I am much afraid that some later wars in the same countries, have not greatly encouraged sobriety. The Roman armies were allowed only vinegar and water in all their expeditions; yet, with this simple beverage, they conquered the world.—*Trotter's Essay on Drunkenness*, p. 140.

† Some require no compulsion, and are hardly ever intoxicated, but are what Trotter calls *sober drunkards*, drinking a great quantity every day, but never to the pitch of intoxication.

south, exactly in the same proportion to the decrease of heat[*]."

Some intemperate men, it has been remarked, have lived to a great age. That some drunkards have numbered eighty years and upwards, there can be no doubt.—But when did they begin, and how long were they able to continue that kind of life? Half the time must have been spent under the impression of deranged intellect; and their sober moments, if they had any, must have been a continued repetition of mental disquietude, dejected spirits, and gloomy apprehensions. If, however, we admit, that one drunkard, of a constitution uncommonly vigorous, now and then may exceed threescore and ten, or even fourscore years[†], the balance is much on the other side, since many thousands fall victims to the bottle before they arrive at thirty.

It is a question respecting which many able physicians differ, whether it is most advisable to abandon the custom at once, or gradually. Much must certainly depend upon the temper and constitution of the patient. Doctor Trotter gives it as his opinion, (and no man has had more experience in that line), that with drunkards, wine, malt liquor, and spirits, in every form, ought at once to be taken from them[‡]. Whereas, Dr. Garnett, on the other hand, approves of the system of gradually diminishing the quantity, until the patient is cured*. In general, however, it has been found, that it must be easier *to abstain totally*, than to attempt *partially to refrain*†.

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[*] Trotter's Essay on Drunkenness, p. 138.

[†] The following is a remarkable proof of the power of *regular habits*, on the constitution, even where they exceed the bounds of moderation. A gentleman in Glasgow used to sit down to dinner at four o'clock, and got up exactly at nine, during which time he and his friends indulged in copious libations of excellent rum punch His friends retired generally *drunk*; he himself was only half intoxicated. At nine o'clock he usually made the circuit of the supper table, at which his family were arranged, and he then retreated to bed. He rose at six, was the first person in the coffee-room to hear the news, and spent the rest of the morning in business. This system was observed for the last thirty years of his life, during which he was a good deal harassed with the cares of business, and he was not free from domestic calamities; yet in his eightieth year his body was strong and active, and his mind possessed all the vigour and energy of youth. This was altogether owing to *regularity*, and his having originally a good constitution.

[‡] Trotter's Essay on Drunkenness, p. 179.—" I conceive the frame of the habitual drunkard to have been so much exhausted by inordinate and unnatural stimuli, that it has been long my practice to commit him to the regimen of children, such as a diet of milk, and other kinds of nourishment of the mildest quality. In short, instead of withdrawing the bottle by those slow degrees which have been long recommended by physicians, my plan of *cure* is, at once to take from him every thing that is highly stimulating; to put him on food in direct opposition to his former modes of living, and consign him to the lap of nature, as if his existence were to pass through a second infancy. Indeed, the reformed drunkard must be considered as a regenerated being."—*Trotter's Essay on Drunkenness*, p. 185.

It may be proper to add, that, for the torturing sickness and lassitude succeeding to the debauch, or intoxication of the preceding day, nothing is more dangerous than to fly to a repetition for a relief ‡. What is less hurtful, and has been found most successful, is a moderate dose of laudanum, or, in case the stomach cannot receive, or retain it, of opium, ordered, for the sake of accuracy, from the apothecary, and succeeded, as soon as possible, by some restorative soup.

On the whole, it can hardly be doubted, that, as on the one hand, a moderate use of liquid food, is essential for the preservation of health and strength, and the attainment of longevity; so, on the other hand, intemperance, in that respect, lays a foundation for many of the most fatal disorders with which the human frame can possibly be afflicted §.

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* Garnett's Lectures on Zoonomia, p. 248.

† It appears from Boswell's Life of Johnson, that even that great philosopher found it necessary to adopt the same rule. " He could refrain, but he could not use moderately." See Life of Johnson, 6th edition, vol. i. p. 450.

‡ Those patients who give up fermented beverage, may receive benefit from vitriolic, nitrous, or marine acids, mixed with water and sugar, so as to suit the palate, and not strong enough to set the teeth on edge. Even the mineral lemonade may be made use of by the sufferer from indigestion. —*Beddoes's Hygeia*, vol. ii. p. 53.

§ Trotter's Essay, Medical, Philosophical, and Chemical, on Drunkenness, and its Effects on the Human Body, (one volume octavo, printed at London, *anno* 1804), is the best distinct work that has been written on this subject. There is a good section on drunkenness in Darwin's Zoonomia, vol. i. p. 240; and some valuable hints regarding it in Pinkerton's Recollections of Paris, vol. ii. p. 338. Dr. Willan, also, in his Reports on the Diseases of London, gives a very satisfactory explanation of the dreadful effects of dram-drinking, with directions to those who are desirous of returning to sobriety and health, an extract of which was printed and circulated, at the expence of the Society for Bettering the Condition of the Poor.

CHAP. III.

OF SOLID FOOD.

TO attempt any detailed explanation, of the vast variety of particulars, connected with the subject of *solid food*, which have occupied the attention of mankind for so many ages, and on which, not only volumes, but, were they to be accumulated, *even libraries* have been written*, would far exceed the limits by which our present inquiries must be bounded. We shall proceed, however, briefly to consider, 1. The uses of solid food, and the necessity thereof. 2. The nature and quality of the different sorts of solid food. 3. The means of preserving them till they are consumed. 4. The cookery, or the mode of preparing them for consumption. 5. The seasoning, or condiments with which they are usually accompanied. 6. The times of eating, and the sort of food best adapted for each meal. 7. The quantity that ought to be taken at the different meals; and, *lastly*, Miscellaneous rules, as connected with climate, and the seasons, and adapted to infancy, childhood, youth, manhood, sickness, and old age.

SECT. I. *Of the uses of Solid Food, including some Observations on Regimen in general.*

THE solid nourishment we take, may answer four different purposes: 1. It may promote the growth of the body, and may enable it to attain that size and strength to which it is by nature destined. 2. It may repair the waste which the body is constantly sustaining, both in its growing, and in its more permanent state. 3. It may prevent, alleviate, or cure the disorders to which the body is liable; and, 4. It may restore the strength which may have been wasted by disease, and may tend to prevent its recurrence.

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* Justly has the poet of health observed, (book ii. line 96),

" I could relate the various powers
Of various foods, but fifty years would roll,
And fifty more, before the tale were done."—*Armstrong.*

It may be proper to observe, that the subject of *solid food*, has been more thoroughly investigated than any branch of the present inquiry; and that the author could only attempt, in this chapter, to make a new, and he hopes a more distinct and satisfactory arrangement, than has hitherto appeared, of the observations of preceding writers, a great variety of whom he has consulted.

1. It is evident, that neither plants nor animals could increase in size and bulk, without the accession of fresh substances, calculated for that purpose. Without such accessions, the slender twig would never become a tree, nor the helpless infant a man. Even the growth of trees is a circumstance, at the first glance, not easily to be comprehended. Attached to the soil, and unable to wander from the spot where they grow, they can only absorb, by their roots, the nutritious fluid particles that moisten the earth, or imbibe, by their leaves, the nourishing substances that float in the atmosphere. The growth of animals is still more extraordinary. But, above all, nothing but reiterated experience could convince us, that it was possible by any art, or in any given period of time, to transform a new-born infant, unable to walk, to speak, to feed itself, without the powers of reason, and who, without the care and protection of others, could not exist for many hours, nor sometimes for many moments, into the active, the intelligent, and the superior being which a man becomes when he reaches maturity; yet, without constant supplies of food, to be assimilated, in the manner that will afterwards be explained, to the nature of the human frame [*], that growth could never take place, nor could that maturity be attained.

2. It is now clearly ascertained, that men, as well as other animals, constantly expend some part of their fluids, their solids, or both, when they are exerting any action, or performing any function of life [†], and that every part of our frame, however solid, undergoes constant changes, and alternately decays, and is restored [‡]. It has been found, indeed, by repeated observations, that all the hair on the body is repeatedly renewed, the nails every two months, and that a thigh bone, if broken, and properly set, will generally acquire its former solidity in the space of sixty days. To repair the losses thus sustained, and to preserve the body, not-

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[*] See Chapter IV.

[†] Fordyce on the Digestion of Food, p. 1.

[‡] The enamel of the teeth is said to be the only exception; hence it is peculiarly necessary to preserve it unimpaired.

withstanding the alterations to which it is thus constantly subjected, it is necessary to furnish the system *with food*, or, in other words, with materials for supplying this perpetual renovation, without a new, and daily supply of which, we could not perform our mental, nor our bodily functions *.

Notwithstanding every possible care to supply the system with wholesome and nutritious substances, the human frame is of so delicate a texture, that it must often be subjected to various disorders, which, in many instances, might have been entirely prevented, or may be more effectually cured by a judicious regimen, than by the use of medicine. In regard to this important branch of physic, we are much inferior to the ancients. Hippocrates hardly describes a disease, without recommending a regimen adapted to its cure; and, in this respect, his example is followed by Celsus and Galen. Aretæus, who is reckoned the most judicious of ancient writers, has declared, that not only in chronical, but in acute disorders, the cure must depend on the regulation of the diet and way of life. The little attention, therefore, which moderns have in general paid to this subject, is the more reprehensible †.

4. When diseases are cured by medicine, and not by diet, they often leave the body in a weak and emaciated state. Among the means by which the strength, which is thus exhausted, can be restored, there is none more likely, both to secure the renovation of health, and to prevent the recurrence of disease, than to follow a judicious regimen, accommodated to the circumstances of the case, the age and constitution of the patient, and the nature of the malady from which he has recovered. Indeed, so powerful are the effects of regimen in the restoration of health, that by means of it, the whole juices of the body can be altered, and the recurrence of the most dangerous disorders, as the gout,

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* See Cadogan on the Gout, p. 39.

† See Dr. Falconer's Observations on some of the Articles of Diet and Regimen, &c. p. 2, 3, &c. This judicious physician sanctions these observations, by the authority of Huxham in his Essay on Fevers. He also remarks, p. 5, that a circumstance, seeming trivial, has caused this part of medicine to be less considered than it ought to be, namely, that the directions for the medicines alone are accustomed to be given in writing, whereas those which regard diet and regimen are generally, in cases which require medical attendance, only delivered verbally. This has, in some measure, caused them to be less attended to, and even hold as inferior, in their nature and consequence, to those which concern the apothecary.

the scurvy, consumption, &c. can in a great measure be obviated[*].

This naturally leads us to consider the nature and qualities of the different kinds of food, by means of which such important consequences can be produced. And here a subject presents itself, of infinite magnitude and extent: for such are the various properties and effects of the different sorts of aliment on the human frame, and so great their variety, as furnished by nature, or improved by art, that to select those in every respect the most eligible, must often be attended with difficulty.

Some would put an end to all such discussions, by our universally resorting to the simple diet, and strict regimen, of Wood, the miller of Essex[†], or of Cornaro. These, and other abstemious people, who, having experienced the greatest extremities of bad health, were driven to temperance as their last resource, may run out in praises of a simple diet; but the probability is, that nothing but the dread of former sufferings, could have given them resolution to persevere in so strict a course of abstinence, which persons who are in health, and have no such apprehension, could not be induced to undertake, or, if they did, would not long continue. It will be much more beneficial to mankind, therefore, to show, (which it is the object of the following observations to explain), *how a pleasant and varied diet, is equally consistent with good health, and to point out the particular substances best calculated for that purpose*[‡].

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[*] In some cases, the return of disorders, even of a paralytic or apoplectic tendency, have been prevented by regimen. See Robinson's Dissertation on the Food and Discharges of Human Bodies, p. 35, 61, and 62, where he describes the regimen by which he in a great degree recovered, at the age of 64, from a paralytic weakness, and other slighter disorders; and was enabled to write an interesting treatise afterwards, on the subject of health.

[†] It appears by the account given by Sir George Baker, in the Medical Transactions of the College of Physicians in London, of Wood, the miller of Billericay, in Essex, that the miller's diet consisted of a simple pudding, made by boiling coarse flour in water, without salt. Of this he consumed about three pounds in twenty-four hours, and took no fluid whatever, not even water, which his abstaining from salt, and great corpulence, rendered less necessary. By this means, he reduced a degree of corpulency, such as to render life a burthen, to a moderate bulk, accompanied with the return of health and strength. A merchant in Leith succeeded in reducing corpulency, by going every morning to the top of Arthur's Seat, near Edinburgh, a hill about 814 feet above the level of the sea.

[‡] See the Works of William Stark, M.D. p. 89. This ingenious author also observes, that, in all cases, great allowance must be made for the weakness of human nature; that the desires and appetites of mankind, must, to a certain degree, be gratified, and that the man that wishes to be the most useful, will imitate the indulgent parent, who, whilst he endeavours to promote

SECT. II. *Of the Nature and Quality of the different sorts of Solid Food.*

SOLID food is derived, either from the vegetable or the animal kingdom*. Many of the articles contained in each are radically the same; but the difference, both in point of appearance, and in regard to the proportions they have of the same substances, is very great. The substances found in each, are numerous. It has been already ascertained that the ingredients of plants are twenty-six, and of animal substances fourteen, and yet thousands of articles have not been subjected to chemical analysis†. But both vegetable and animal substances are *principally* resolvable into starch, sugar, mucilage or jelly, oil or fat, and gluten; and, as these principles are more abundant, and of better quality, in animals, than in plants; hence, in equal quantities, animal is more nourishing than vegetable food‡.

We shall begin with considering the different sorts of solid food produced by the vegetable kingdom, as by far the greatest proportion of human beings live upon the productions of the soil; and as fruits were probably the first articles on which men depended for their subsistence.

I. *Vegetable Aliment.*

Vegetable aliment may be divided into ten classes. 1. Fruits. 2. Nuts. 3. Pulses. 4. Grains. 5. Roots. 6. Salads. 7. Pot-herbs. 8. The mushroom tribe. 9. Marine plants; and, 10. Miscellaneous articles.

1 *Fruits.*—The natural productions of trees and plants,

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the true interest of his children, allows them the full enjoyment of all those innocent pleasures in which they take delight. If it could possibly be pointed out to mankind, that some articles used as food were hurtful, whilst others in their nature, were innocent, and that the latter were numerous, various, and pleasant, they might, perhaps, from a regard to their health, be induced to forego those which were hurtful, and confine themselves to those which were innocent. But that is the utmost extent of forbearance that can well be expected.

* Salt is derived from the mineral kingdom, but is used, not as food, but as seasoning or condiment.

† Thomson's System of Chemistry, vol. iv. p. 206, and 474. No wonder that chemistry should still be considered in an imperfect state, when this intelligent author observes, "*that the task of analyzing all animal bodies is so* "*immense, that it must be the work of* AGES OF INDEFATIGABLE INDUSTRY." Ib. p 473.

‡ Practical Synopsis of the Materia Alimentaria, p. 1, and 2.

were the first substances to which men would direct their attention, with a view to aliment, though fruits, now, have in general become rather an article of luxury, than of solid diet. They may be arranged under five classes: 1. Stone fruits. 2. The apple species. 3. Small seeded kinds. 4. Small berries; and, 5. Farinaceous fruits. It is not proposed to enter minutely into the discussion of these articles, but merely to give a general view of each particular; and then to add some remarks on fruits in general.

1. Stone fruits*, are usually of a soft texture, and their juices dilute, by which means they are easily dissolved in the stomach; but being more liable to fermentation than any other, and producing a copious acid, they are apt to irritate the intestines, especially if they are used before they are ripe. Of stone fruits, the peach is reckoned the most delicious; and though not very nutritious, yet is rather serviceable in obstructions and bilious disorders. Apricots, when thoroughly ripe, are likewise nourishing, and more wholesome than the peach, and still more so than the cherry or the plum. Cherries are palatable, and are recommended in the scurvy, and in putrid fevers; but ought not to be taken in too great quantities. Plums are of various sorts, differing in colour, form, size, and taste; but on the whole, unless when perfectly ripe, they are a dangerous fruit, though in a dried state, (when they obtain the name of *prune*), they are laxative, and consequently of use in costive habits. Tamarinds, a fruit difficult to classify, are more frequently employed for medicinal purposes than as an article of diet.

2. The apple species is, on the whole, a more valuable and useful article, than what is known under the name of stone fruits. There is a very great variety of this species, which by art may be still more extended. Of the real apple there are two great divisions, the sour and the sweet, both of which are palatable, and sufficiently salutary. The pear is still more wholesome, when it is thoroughly ripe, In their crude state, both pears and apples produce flatulence and acidity, which inconveniences are prevented by having them either baked or boiled. Medlars, quinces, and pomegranates, are not much known in this country. Figs furnish

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* Stone fruits possess something peculiar in their nature, which renders them not so salutary for the stomach; and with the smaller sorts there is a risk of swallowing the stones, from which the most fatal effects have arisen.—*Turnbull's Medical Works*, p. 82.—See also a paper in the Philosophical Transactions.

a wholesome food, both crude, and in a preserved state. They are said to have been the first aliment, of agreeable taste, used by the natives of Greece[*]. The China orange[†] is certainly a delicious fruit, exceedingly pleasant and cooling, powerfully antiscorbutic, and highly useful in fevers, especially those of a bilious or putrescent tendency; but, on account of its acidity, it is liable to all the inconveniences that attend the use of stone fruit. Lemons and limes are principally useful, as good correctors and agreeable sauce, for many kinds of animal food, especially fish; and their juices diluted with water, and sweetened with sugar, are employed to allay thirst,—in fevers, to correct putrescency,—as an antidote to the scurvy,—and for other medicinal purposes[‡]. The pine-apple, on account of its grateful taste, and fragrant odour, is called the *king of fruits*, but should not be taken in great quantities, being very apt to disagree with many people, particularly the aged.

3. The small-seeded sorts of fruit are by far the most wholesome and important. Of these the grape ought, in the first place, to be mentioned, not only on account of the valuable liquor which it produces, but also as the fruit itself, when fully ripe, is cooling, antiseptic, and nutritious. Currants, a smaller sort of grape, though inferior in some respects to the produce of the real vine, can be eaten with advantage in a raw state; they may likewise be converted into wine, and they form, by different preparations of cookery, many valuable articles. The same observations are applicable to gooseberries, raspberries, and mulberries. In regard to strawberries, it is impossible to say too much in favour of that fragrant, cooling, and wholesome article. There are various modes of eating them, but with milk or cream, is generally accounted the most salutary and agreeable, as their oily nature is found to lessen the tendency of that fruit to fermentation. Strawberries are moderately laxative, and are supposed to possess qualities unfavourable to the formation of stony concretions.

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[*] Athen. l. iii. c. 2. p. 74.

[†] The Seville orange is sour, and somewhat bitter, and though less palatable, yet is more stomachic than the China orange. Lemons and oranges, and other fruits containing a great quantity of native vegetable acid, afford but little nourishment; but they are useful, as correcting the bad properties of other food.

[‡] The acid of lemons, and other fruits of the same sort, is known under the name *citric acid*, which forms the proper specific for the scurvy, and is also the best corrector of vegetable and narcotic poisons.—*Turnbull's Medical Works*, p. 85.

4. The fruits to be classed under the head of small berries, are the cranberry, the bilberry, and the red whortleberry. Of these the cranberry is the one principally in use; and, when baked with a proper quantity of sugar, it makes a tart that is generally relished.

5. The farinaceous fruits are not considered to be of a wholesome quality. The melon, which is the principal, is said to be an article of great consumption in some parts of Asia, particularly in Persia, but it is not so generally made use of in Europe; and the plan of eating it, adopted in France, namely, with roasted meat, is much preferable to the mode usual in England, that of mixing it with other fruits after dinner, when it disagrees with many stomachs. The water-melon is, in hot climates, very useful in quenching thirst, and cooling the body, and ought to be more generally propagated than it is. The cucumber is not a general favourite, and is principally consumed in salads, and in a raw state can only be safely taken by those who have strong stomachs. It makes, however, a useful addition to various sorts of soups and broths. The gourd, and the pompion, are not much known, or approved of in England.

Of Fruits in general—Fruits have two bad qualities; the first, excess of acid; the second, a tendency to fermentation.

Unripe fruits possess much of the acid principle: fruits when ripe, abound more in saccharine matter, and may be more safely used.

There are three modes of consuming fruits: In a crude state,—dried,—or prepared by the arts of cookery.

When crude, they ought only to be eaten thoroughly ripe; and, if then taken in moderation, they are of the highest utility. They seem to be produced by nature at that season of the year, when such substances, with the watery, refreshing, and diluting qualities they possess, are particularly acceptable, tending to allay that excessive heat, and increase of circulation, which our body, during the heats of summer and autumn, is apt to be troubled with.

In some countries it is usual to breakfast upon fruit; and such a plan may be wholesome, in cases where the labour the individual has to undergo, does not require more nourishing diet. Others take their fruit before dinner, and this practice is supposed to be proper for those who are of a costive habit*. The use of fruit, however, *after meals*, is the most common, and, in moderation, the safest practice, more especially where much animal food is consumed.

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* Persons in health may eat fruit at any time. Young persons, full of blood, may be benefited by a moderate use of fruit an hour or two before

Dried fruits[*], in particular grapes or raisins, plums or prunes, and figs[†], are valuable articles of food, their watery and acid particles being thus in a great measure dissipated, and they become less disposed to ferment; they are safer than when in a crude state, and sit more easy on the stomach. Thus, by a simple process, the inhabitants of cold countries are enabled, through the medium of commerce, to enjoy the pleasure of consuming articles, which their climate has not permitted them to cultivate.

Fruits are variously prepared for consumption, as by roasting, baking, boiling, stewing, or preserving in spirits. Wherever the fruits are pulled before they are ripe, they ought to be thus prepared, as the application of heat, and the addition of sugar, spirits, or spices, removes many objections to the use of this species of food, even to the most delicate stomachs, correcting their acidity, or checking their tendency to ferment. Strong and mellow wine also, obviates the pernicious effects of bad fruit. Sugar likewise, renders fruit more nutritive, and in particular, is a judicious addition to sour fruits.

2. *Nuts.*—In ancient times, nations were sometimes distinguished according to the particular article on which they lived, hence the Arcadians were called *acorn-eaters:* and it is generally supposed, that substances of the nut species, were one of the first means of subsistence to which men applied. It is imagined, however, that the acorns, so often mentioned in ancient history and tradition, comprehended several other kinds of shell fruits, than the produce of the oak, as chestnuts, walnuts, &c[‡].

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dinner, as it may abate a keen appetite for the principal meal. Persons subject to little irregular fevers, will be benefited by eating fruit in the morning and evening. Persons subject to indigestion and acidity of the stomach, ought to eat their fruit rather after than before dinner.—*Adair's Medical Cautions*, p. 211.—To persons with weak digestion, the addition of a meal from the garden, to a meal, (probably too full a one), from the kitchen, is in the highest degree pernicious.—*Beddoes's Hygëia*, vol. ii. Essay VIII. p. 64.

[*] Dried dates constitute the common food of a great part of Asia. They are produced by the palm tree, which is justly accounted one of the most curious of vegetable productions, being so extensively useful. The date is of different kinds; in their best state, they are a pure saccharine fruit, free from acidity, but with a considerable degree of acerbity.

[†] Dried figs are the most nourishing of the dried fruits, and were given to the ancient athletæ as part of their food.

[‡] Goguet's Origin of Laws, &c. vol. i. p. 77. Potter, in his Antiquities, thinks otherwise. The acorn of the *quercus suber*, or the cork tree, is as good as the filbert; and like them, sold in the markets of Spain.

The nut species still furnish, in some countries, a considerable source of food; but though, on the whole, they are nutritious, from the quantity of oil they contain, yet they are difficult to dissolve, owing to the viscidity, or glutinous quality of their farinaceous matter, and hence they require strong stomachs to digest them. In many cases they oppress the stomach some hours after they are used. They are best when eaten fresh, with the addition of salt, but unless they are taken in very moderate quantities, they are very apt to affect the stomach and bowels[*]. The best form of using them is in puddings and emulsions, when their tenacity is in some measure broken by sugar. The filbert, when taken in moderation, is not considered to be unwholesome; but if eaten in considerable quantities after a meal, as is often the case, and upon a full stomach, they frequently pass the bowels undigested. The chesnut has a good deal of sweetness, and somewhat of a saccharine nature; and when properly mollified, by roasting or boiling[†], which destroy its viscidity, it becomes abundantly light and nutritive. Walnuts, when eaten fresh, are palatable and nutritious. The sweet almond has a pleasant flavour, and is exceedingly nutritious; but if long kept, its oil becomes rancid, and it is difficult of digestion.—Orgeat, however, which is prepared from this article, is a pleasant and useful emulsion. Bitter almonds, when fresh, are a dangerous fruit, and poisonous to some animals; but when deprived of their acrimony, by heat, may be used with safety. Pistachia nuts are perhaps the wholesomest of the almond tribe. The cashew nut cannot be eaten with safety, until deprived of its oil by heat. But of all this tribe, the chocolate nut (*Theobroma Cacao*), is the most valuable; the farinaceous part of this nut, prepared in the form of chocolate, being highly nutritious[‡]; and it furnishes likewise some liquid food.

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[*] Hoffman observes, that dysenteric complaints are always most common in those years in which the harvest of nuts is plentiful; and this species of fruit is the most dangerous of any likely to fall in the way of the lower orders of the people, more especially in the country. When taken even in small quantities, they are found to oppress the breathing, and to produce vomiting and bowel complaints; but in large quantities, they have been often known to lodge in the stomach, and to be incapable of being removed from thence by any medicine, and, of consequence have put a speedy end to life.—*Falconer's Essay on the Preservation of the Health of Persons employed in Agriculture*, p. 13.

[†] In many parts of Italy, boiled chesnuts are used as a substitute for potatoes.

[‡] The oil of the cocoa nut, in its separate state, is used as a cosmetic for rendering the skin smooth and even, and preventing wrinkles. It leaves no appearance of unctuosity behind it.

3. *Pulses.*—Next to fruits, and the nut species, men would naturally apply to the pulse tribe for subsistence, as it required little labour to procure it. Of these articles, pease are the most general. In a tender state they form a wholesome and light food; and even when brought to maturity, they are excellent for various culinary purposes. They are sometimes made into bread; but without a large admixture of wheaten flour, the bread is hard, heavy, and unpalatable*. Lentils are an inferior sort of pea. The bean is another species of pulse, much used in this country, but more frequently given to horses, than to the human species. Kidney beans, being eaten with their cod, are not so flatulent as other pulse. When well boiled, they are palatable; but not very nourishing.

The consumption of pulse, as human aliment, is greatly circumscribed. In their earlier state, when succulent, they are generally acceptable; but when all their parts have reached maturity, they are only calculated for those who have strong digestive powers of stomach. It is fortunate, however, that they furnish excellent food for various descriptions of domestic animals; and thus the soil, which would be exhausted by perpetual crops of grain, is enabled to preserve, or to recover its fertility, under the less severe production of the various sorts of pulse, which derive no inconsiderable proportion of their nourishment from the atmosphere.

4. *Grains.*—When neither fruits, nor any of the pulse tribe could be obtained, men would endeavour to procure, from the various sorts of grain, the means of their subsistence: of these, the principal are, 1. Wheat. 2. Barley. 3. Oats. 4. Rye. 5. Rice; and, 6. Maize; to which some miscellaneous articles may be added.

1. Wheat is the most perfect, and the most nutritive of grains, and the best calculated for making bread. It consists of three distinct parts, two of a vegetable nature, and one a sort of gluten, which possesses the properties of animal matter. 2. In many parts of Europe barley is the principal article of subsistence, and till within these sixty years, it was much used in the midland and western counties of England; but the bread formed from it, though not unwholesome, is darker and heavier than wheaten bread. It should be made into pot or pearl barley, before it is con-

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* In Edlin's Treatise on Bread-making, there are receipts for making pease bread, &c. which, as substitutes for wheaten bread, are well calculated for the active and laborious classes of the community.

verted into flour. When wheaten bread can be obtained, barley is principally applied to the manufacture of liquors. Converted, however, into what is called pot, pearl, or Scotch barley, it is found of great use, as an ingredient in broth. 3. About fifty years ago, it was calculated, that nearly a fourth part of the inhabitants of Great Britain lived upon oat bread; but the increase of wealth, and luxury, has greatly diminished its consumption. It is supposed, that under an improved system of agriculture, more nourishment per acre, may be obtained from oats, than from the same quantity of barley or rye; but to wheat it is evidently inferior. 4. Rye is a very common grain in the northern parts of Europe; and, indeed, without winter rye, which is a hardy grain, and ripens early, the inhabitants of those countries could hardly exist. Bread made of rye, is of a dark brown colour, lies heavy on the stomach, but is found to be nutritious. 5. Rice is a valuable article, which probably furnishes subsistence to greater numbers of human beings, than all the other grains put together. It is remarkable for its mild and innocent qualities, sits easy on the stomach, and is well calculated for invalids. It may be used in various ways, namely, plainly boiled, or mixed with other articles, and converted into a pudding, or manufactured into bread; but, when the last mode is attempted, it must be mixed with a considerable proportion either of wheaten flour, or of oat-meal. In 1799, it was found to be very useful in correcting the bad qualities of both these kinds of food. From its insipidity, spices, and what is called *curry powder*, are often used with it. 6. Maize, or Indian corn, is the chief article of sustenance in North America, and some parts of the West Indies. It is also grown in the southern parts of Europe, where a number of preparations are made from its meal, as the Italian *polenta*, &c. Though a nourishing article, yet it does not make fermented bread in any respect comparable to wheat. 7. A variety of other articles may likewise be comprehended under this general head, as buck-wheat, manna-grass*, the bread-fruit, the bread-nut, the plantain-fruit, &c.; but any discussion regarding them would exceed the limits of the present work.

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* Manna-grass is a favourite food of the Poles and Germans. It has a sweet agreeable taste; and, boiled in milk, is said to prove remarkably nutritive. It is used more for invalids, than as a common article of diet.—*Turnbull's Medical Works*, p. 71.

5. *Roots.*—When nothing calculated for subsistence was found above ground, it would be natural to apply to the roots of plants, as the means of procuring aliment; and various articles of that description are found to contain a large proportion of nourishing matter, though in that respect inferior to grain. Roots are divided into two sorts; 1. Those which are used as food; and, 2. Those which principally answer the purposes of condiment or seasoning.

1. The potatoe is the most valuable of all the articles of subsistence produced under the surface*. It affords a mild and wholesome nourishment, but not so substantial as the various sorts of grain. It would require a separate work, to enumerate the great varieties of this valuable root, the advantages of each, the mode of cultivating them, the manner in which they ought to be preserved, and the means by which they are rendered fit for consumption. On account of the importance of this article, however, the best mode of preparing the potatoe, as food, by properly boiling them, shall be afterwards explained. (*Sect.* 4).

Turnips are a most excellent vegetable, and afford a light and wholesome nourishment, though rather watery and flatulent†. It appears that the ancient Romans, in the best period of their republic, lived much upon this root. With many people they gently purge; hence they are good for those who are subject to be costive. They are principally cultivated, however, at present, for the use of animals rather than of men. When raised to a great size, they furnish but a weak, or watery nourishment. The carrot is a more nourishing article; but to many persons it is found difficult to digest; being of a flatulent nature. It requires, on that account, much addition of condiment to render it wholesome. It ought to be eaten young, otherwise it lies heavy on the stomach. It is a good ingredient in soups, when grated. To horses and cattle it is a most acceptable food. The parsnip, the beet, Jerusalem artichokes, &c. are not in such general use as to require any particular detail. Of these the parsnip is reckoned the most nourishing; it is likewise of easy digestion, and agreeable to some palates, though many dislike it on account of its sweetness.

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* The potatoe is the best substitute we possess for bread. It is properly a light alimentary substance, neither viscid nor flatulent, and having no tendency to acidity. It is questionable, however, whether it will support the laborious and active in a state of health, without the aid of some other kind of aliment. It is true, that the lower orders in Ireland, who live almost entirely on this article, with the addition of milk, are distinguished by their personal appearance; but they do not work so hard as the labourers in England, or even some parts of Scotland. During the late scarcities in Scotland, many labourers, who attempted to live on potatoes alone, were obliged to give them up, on account of the weakness and faintness they occasioned, which they said was removed, when they returned to other sorts of food, animal food in particular.

† There is a species of turnip which grows in North Britain, called the yellow turnip, which is sweet, and of a superior quality to those produced in the neighbourhood of London, which are bitter and stringy. The yellow turnip is not only nourishing, but also hardy. It is eaten with milk, to cure the consumption and scurvy.—*Buchan's Domestic Medicine*, p. 641.

The Swedish turnip is also, in many respects, a most valuable article. But it is to be observed, in regard to turnips in general, that they disagree with those who have weak stomachs, and are subject to flatulency.

Esculent roots, however, the potatoe excepted, are seldom used solely for food, but are brought to our tables, principally to qualify our animal food, by lessening its tendency to putrefaction[*]. The number of articles comprehended under this head, is very great: Mr. Bryant of Norwich, enumerates above forty produced in this country[†].

2. There are various roots, which are sometimes used as food; but are more generally employed as seasoning or condiment. Of these, the onion is much in use, and affords a large proportion of nourishment. It is supposed, indeed, that hardly any substance possesses it to a greater extent, in so small a compass[‡]. The *leek*, the *garlic*, the *shallot*, are of the same species, and possess qualities of a similar nature. They agree best with persons of a cold and phlegmatic habit, where the stomach is weak and relaxed, and where it requires the aid of a powerful stimulus to assist digestion. The horse-radish is a warm and pungent root, much used as condiment, more especially with roast beef, to the digestion of which it is supposed to contribute.

6. *Salads.*—Some ancient nations, we are told, were accustomed, to range over the fields and woods in search of food, devouring, like animals, any wild herb they could find

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[*] Adair's Medical Cautions, p. 213.

[†] In tropical countries, yams, eddoes, and sweet cassada, boiled or roasted, are served up at dinner, and called bread-kind. They supersede the use of bread.

[‡] It is a well known fact, that a Highlander, with a few raw onions in his pocket, and a crust of bread, or some oat-cake, can travel to an almost incredible extent, for two or three days together, without any other sort of food whatever. The French are fully aware of the quantity of nourishment this plant affords, hence the soup *a l'oignon* is considered by them as the best of all restoratives.

likely to satisfy their hunger[*]; and some herbs are still used in a raw state. Of these, the lettuce is one of the most valuable, from its cooling quality; but as it is of an insipid nature, it is generally eaten with other herbs, in the form of a salad; and a proportion of egg, oil, vinegar, and mustard, is added to it. Lettuce must be eaten young; and ought to be *blanched* or tied up, so as to be deprived of light, otherwise it is of an acrid nature. Celery, also contains a poisonous acrimony, unless where it is blanched in the same manner; and instead of being used in a crude state, is most wholesome in broths, more especially in the summer season, when the stomach can best bear to be stimulated. Cresses is another article eaten raw, and is much relished for its aromatic qualities. According to Xenophon, the ancient Persians lived much upon water-cresses, which they considered the wholesomest of vegetable productions. When boiled, they lose their aromatic, and other properties. The radish is another article consumed in its crude state. It is acrid, and most wholesome when scraped. Sorrel also is used in salads. Endive and succory may be employed in the same manner, provided they are blanched, by which they are deprived of their acrimony.

In regard to salads in general, they are rather to be considered as articles of luxury than of aliment. Mons. Gosse found that the bitterest were the most digestible; that all of them were more digestible boiled, than raw; and that vinegar retarded their digestion. *Lettuce*, which contains a kind of opium, disposes to sleep, and may therefore make a proper article of supper, to such invalids as are in want of that refreshment. Cucumbers are very cold, and difficult of digestion. It is remarkable, that almost all nations have concurred in joining oil and vinegar to this kind of food; probably from experience, finding that they checked its disposition to ferment and to occasion flatulency[†].

7. *Pot-herbs*.—There are many articles, known under the general name of pot-herbs, which cannot be consumed in a raw state, but which are rendered wholesome by the operations of cookery, and are of use, particularly at a dinner

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[*] As Lucretius, lib. v. sings;

Quæ sol atque imbres dederant, quod terra crearat
Sponte sua, satis id placabat pectora donum.

For instances of persons living solely upon grass and hay. See Daniel, cap. ii. verse 32, 32; Tulp. Observ. lib. iv. cap. 10.

[†] Adair's Medical Cautions, p. 219. An Easy Way to prolong Long Life, p. 28.

meal, by making less animal food necessary. Of these, the colewort tribe is the most important; and among them, the cauliflower and brocoli are the most valuable. Cabbages, also, are in use both for men and animals; but when consumed by men, they cannot be too much softened in their texture, to render them fit for digestion. White cabbage is preferred for boiling, and the red for pickling. Artichokes[*], asparagus[†], and spinage, are well known as useful articles for diet, easily digested, and not flatulent. They afford but little real nourishment. They are well calculated, however, for persons with weak stomachs, and who take but little exercise.

In regard to pot-herbs, in general, it is to be observed, that they are of considerable use, to counteract the putrescency of animal food, being in some degree of a sourish or acescent, nature. They are laxative; and are useful in summer, to relieve the bowels, when costiveness takes place, which often happens at that season of the year, from the increased discharge by the skin. They should be boiled by steam, by which their texture will be abundantly softened[‡]. They certainly were not originally designed for human food, and are not, in general, so easily dissolved in the stomach, nor so grateful and nourishing, as roots are; but their noxious qualities are sometimes got the better of by cultivation, and sometimes removed by cookery.

On the subject of forcing some kinds of vegetables, as cauliflowers, asparagus, potatoes, &c. earlier in the season than nature usually permits, it only produces an article, insipid and unwholesome, and which nothing but fashion, and luxury, would render in any respect even tolerable.

8. *The Mushroom tribe.*—The class of vegetables called *Cryptogamia*, (order, *Fungi*), is so numerous, that the bare enumeration of them, would require a volume; and Sowerby, in giving an account of the English mushrooms alone, of which there are 400 varieties, has taken up no less an extent than three volumes folio. Many of the fungus tribe are much esteemed in foreign countries, on account of their high flavour; but in this country, the garden mushroom is almost exclusively cultivated for food, or the

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[*] Artichokes, if young, and properly boiled, are of a tender texture, and furnish very mild and good nourishment.

[†] Asparagus is only wholesome when in an intermediate state, between root and plant. When old, it is remarkable acrid; but when young, it is sweet and mucilaginous, and highly diuretic.

[‡] Turnbull's Medical Works, p. 72.

manufacture of catsup. The wild mushroom, however, when found upon the old pastures, is more delicate than those raised on artificial beds. Good mushrooms are nutritious, resembling meat in many of their properties; but they can only be eaten, in any considerable quantity, by persons with strong stomachs, being rather of a tough and leathery consistence. In Russia, the mushroom tribe contributes to the sustenance of great multitudes of people. They are eaten almost indiscriminately, and are kept salted for winter use. Haller considers mushrooms as a doubtful and suspicious sort of food; and he remarks, that often, when to all appearance they are innocent, they have sometimes proved prejudicial. As vegetable acids are the best condiments to use with them, they are preferable in a pickled state. The truffle is a subterraneous fungus, growing generally in clusters, three or four inches under ground, without any visible root. Truffles are eaten either fresh, roasted like potatoes, or dried and shred, and put into ragouts. Morels are also of the fungus tribe. Both recent, and dried, they are much esteemed at the table; and, in particular, they are in use as an ingredient to heighten the flavour of ragouts. They are less dangerous than the common mushroom, and are a fashionable article to ornament dishes containing other food.

9. *Marine Plants.*—It is surprising, considering our insular situation, that so little attention has hitherto been paid to a great variety of plants with which our coasts abound. Hitherto, only three articles have been used as food, namely, laver, dulce, and the sweet tangle; but in China, we are told, that most of the plants that grow on the sea shore, are found to possess an invigorating quality, and are, therefore, in constant use as pickles and preserves, or, simply dried and cut, and mixed with soups in the place of other vegetables. The leaves of one of these, apparently a species of that genus of sea-weed called by botanists *Fucus*, (the *Fucus Serratus*, Linn.) after being gathered, are steeped in fresh water, and hung up to dry. A small quantity of this weed, boiled in water, gives to it the consistence of a jelly, and when mixed with a little sugar, the juice of an orange, or other fruit, and set by to cool, there is no jelly more agreeable or refreshing*. In this country,

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* See Barrow's Travels in China, p. 552. This intelligent author, in his account of Cochin-China, p. 133, has entered into a fuller detail regarding this important subject. In the neighbourhood of Bourdeaux also, I understand that much use is made of marine plants as food.

marine plants are commonly used as condiment, or eaten raw, like sea-salad, or dulce.

10. *Miscellaneous articles.*—Such is the variety of vegetables found capable of yielding food to man, that it is hardly possible to include the whole of them in any distinct class. Under the head of miscellaneous articles, sago may be specified, which is a substance prepared from the pith of a species of the palm-tree, growing in the East Indies. It is an article of a very nourishing nature, and forms a very considerable part of the food of the inhabitants in many districts in the East. In Europe it is principally used as an occasional article of diet for the convalescent and the sick. Salep, a preparation from the root of the orchis, is a substance of a similar nature. It comes from Turkey and Persia; but the root is not uncommon even in this country, though inferior in point of size, and perhaps in quality. Tapioca is another nutritious mucilage, which is prepared from the roots of the cassada. Indian arrow-root agrees with these articles in its general nutritious property; but is reckoned to excel them all, in affording a much larger proportion of mucilage than any vegetable hitherto discovered. It has, however, a tendency to occasion costiveness, which in some cases may render it particularly useful. Iceland liverwort, *(Lichen Islandicus)*, is another most nutritious substance. Boiled with milk alone, it yields a wholesome and palatable nourishment, much used by the Icelanders; in this country, it is chiefly used, from its demulcent quality, by invalids and convalescents, and, in particular, by those who are afflicted with colds or consumptions. Vegetable mucilage, as gum-arabic, is capable of nourishing, which is evident from whole caravans subsisting on it for a long time when they can procure no other food. The natives of Senegal also, live much upon gum; but it is said, that they are obliged to drink great quantities of liquid with it, in order to distend their stomachs. In France, gum is used as a remedy for the heartburn, also in pulmonary complaints, and often with success [*].

2. *Animal Food.*

The arguments in favour of animal food in general, more especially when compared to vegetable diet, shall be stated at the conclusion of this section. At present we shall proceed to consider the different classes of animal food used by men, under the following general heads: 1. Quadrupeds. 2. Birds. 3. Fish, and, 4. Amphibious animals.

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[*] Fordyce's Treatise on Digestion, p. 100. Pinkerton's Recollections of Paris, vol. i. p. 200.

1. *Quadrupeds.*—This extensive source of animal food, which affords more nourishment to man than all of the other conjoined, may be considered under seven heads. 1. Cattle. 2. Sheep. 3. Pork. 4. Goat. 5. Venison. 6. Hare, and, 7. Rabbit.

1. The flesh of oxen, well fed, and of a proper age, is justly accounted the most nutritious of all kinds of animal food, and is easily digested by persons in health[*]. Cow beef is tenderer when the heifer is young, but is frequently tougher, because the cow is commonly older than the ox when slaughtered. Veal is tender and nourishing, but not so easily digested, from its glutinous quality. To weak and indolent stomachs, its digestion requires to be assisted by the addition of vegetable acids, as lemon or vinegar. In regard to the various sorts of wild cattle, their flesh is in general much inferior to the domestic ox. Beef is constantly in season, since by the improvements in agriculture, cattle can always be abundantly supplied with food, even during the depth of winter.

2. Mutton is well known to be a highly nutritious and wholesome meat, and is perhaps more universally used, and, indeed is more generally relished, than any other sort of animal food. Wedder mutton is most esteemed, and is generally accounted the sweetest and most digestible; but a ewe, that has not had a lamb the season before she is killed, yields as good mutton as a wedder of the same age. The quality of the flesh depends in a great measure upon the nature of the pasture, and the age of the animal. When fed upon a dry pasture, especially if mixed with wild herbs, and kept to four, five, or six years of age, no meat can be more savoury[†]. Lamb, when properly roasted, and of a proper age, that is, from four to six months old, is an ex-

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[*] The following fact proves the nutritious qualities of beef. Humphries the pugilist, was trained by Ripsham, the keeper of the jail at Ipswich. He was sweated in bed, and afterwards was twice physicked. He was weighed once a-day, and at first fed on beef; but as on that food he got too much flesh, they were obliged to change it to mutton.

[†] Wedder mutton, when fed on dry pasture, near the sea shore, and at five years of age, is in its highest state of perfection. Roasting is the best form of eating it. Some have observed, that the fat of mutton, from its tendency to coagulate, is less easily assimilated in the stomach than the fat of most other animals. The lean of mutton, therefore, is the preferable part for food.—*Turnbull's Medical Works*, p. 54.

cellent food; but house-lamb, the production of modern refinement, is a tasteless and insipid aliment, and cannot be wholesome, from the manner in which it is reared.

3. The ancients considered pork*, as the species of food that conveys most strength and vigour to those who feed upon it. Hence it formed the chief food of the athletæ of ancient Rome, who complained of a sensible decay, when they disused it for any space of time. Those, however, who are trained to athletic exercises in modern times, are fed on beef or mutton, in preference to pork, as they find that it has a purgative tendency; yet in general it is considered as yielding strong nourishment, suited to those who lead an active and laborious life. The flesh of the sucking pig is reckoned a great delicacy, and is also nourishing, but is by no means a proper food for weak and sickly persons. The flesh of the wild boar is reckoned more palatable, and more easily digested, than that of the domestic hog.

4. The domestic goat was anciently held in much estimation as food, and in modern times, the haunches of the goat are frequently salted and dried, and supply all the uses of bacon; the Welsh call it *hung venison*. But the meat of the wedder goat, (the *hyfr* of Wales, or *aver* of Scotland), is still better, and under the name of *rock venison*, is supposed to be little inferior to the flesh of deer†. It is reckoned peculiarly nutritious in soup. In the West Indies, the flesh, both of the ewe and of the wedder goat, is accounted as good as mutton‡. The flesh of the kid is a great delicacy every where; in the East Indies, it is preferred to lamb, and the Arabian physicians in particular esteem it.

5. In the hunter state of society, men chiefly subsisted on the produce of the chase, of course lived much upon venison, and it certainly is not only a delicious, but a nutritive and wholesome food. Fallow deer is, on the whole, the best, though the flesh of the wild stag is the highest flavoured, and very palatable in autumn, when it is in its most perfect state.

6. The ancients considered the hare as the first of all

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* A less quantity of this sort of flesh is necessary than most others, hence it is so cheap a diet. Its digestion should be assisted by acids. Indeed pickled pork is the best mode of using it, as the salt assists the solution of its oily parts.—*Turnbull's Medical Works*, p. 55.

† Pennant's British Zoology, p. 149.

‡ Both on account of the milk it produces, and its flesh and skin, it is a pity that the West India goat is not more attended to in this country.

quadrupeds for eating *; but in modern times it is reckone dry and heavy. When killed after a long chase, its flesh firmer and tougher, than when killed in the seat; an ol hare is hardly eatable, unless when converted into sou but the flesh of the roasted leveret is nutritive, and easi digested.

7. The flesh of the rabbit resembles that of fowl, and equally digestible; the young, in particular, are well suit to weak stomachs. The tame, is fatter and more tend than the wild rabbit; but the latter, from the greater v riety of its food, and the exercise it takes, is wholesome and is more agreeable to the taste. There is little viscidi in its meat, and consequently it is one of the lightest a most digestible foods in use.

2. *Birds.*—The flesh of birds is lighter, drier and more ea ly digested, than that of four-footed beasts; and is partic larly calculated for persons in the studious professions, as t blood produced from thence is clear, light, and full of s rit, and peculiarly favourable to the exercises of the mind

The various [illegible] of birds consumed as food, are eith 1. In a domesticated, or, 2. In a wild state.

1. The dunghill fowl is a most useful domestic anim and when young ‡, or at its full growth, affords a delic and wholesome food. They are best when about a year ol and accustomed to range about, instead of being cooped and crammed. The fat of the barn-door fowl, is equal dispersed throughout the muscles, whereas, when the bi is fatted hastily, the fat is accumulated in particular par Turkeys are of the same nature, and equally easy of dige tion. This kind is remarkable for its tenderness in reari when young, and its hardiness afterwards. Guinea or Indi fowls are more difficult of digestion than the dunghill-fo or the turkey.—The peacock is seldom eaten in modern tim though from its scarcity, or the splendor of its external a pearance, it was anciently a principal part of Roman luxu In former times, the swan was served up at every gre feast in England, as a dish of state, when the elegance

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* Inter quadrupedes gloria prima lepus.—*Martial.*

† Lynch's Guide to Health, p. 182.

‡ When young, the hen is well calculated for invalids; and in regard mildness, is nearly equal to vegetable aliment. Young cocks are good e ing. Capons, more especially *poulardes*, or hen capons, are accounted p culiarly delicate.

the table was measured by the size and quantity of the cheer[*]. Pigeons furnish food of a dry and heating nature, but are best when young. In regard to tame water-fowl, the goose is wholesome food for strong stomachs; but even then it frequently requires onions or ardent spirits, to assist the digestion. The tame duck is reckoned more delicate and wholesomer eating than the goose, particularly if properly fed, and kept not on stagnant, but near clear and running waters, producing water-cresses, and similar plants[†].

2. The birds, in a wild state, made use of as food, are to be found either on land or on water.

In regard to the first, the partridge is much valued as a delicate food; but is not equal, in point of flavour, to grouse and the black-cock, nor so easily digested. The quail resembles the partridge, but is apt to lie heavier on the stomach. The pheasant is less digestible than the common fowl, but is preferable to the flavour. The ortolan is reckoned one of the greatest luxuries of the table. Among a variety of other land birds which are occasionally eaten, the woodcock principally merits to be noticed. It lives chiefly on insects, is of a tender structure, approaching to white meats, and resembling, in point of delicacy, the dunghill fowl[‡].

As to wild water-fowl, though many of the species are eatable, yet they are generally too fat, and fishy tasted, for any but the strongest stomachs. The teal, though much of the nature of the wild duck, is more tender and savoury, and the most wholesome of this kind. The solan goose or gannet, and the layer or puffin, are remarkable for a rancid fishy sort of meat, which it is very difficult to digest. Indeed, none of the whole tribe of wild water-fowl can be much recommended.

3. *Fish.*—The advantages of fish[§] in diet, has been much

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[*] Pennant's British Zoology, p. 149. Swans, when young, may be fatted, so as to become good eating.

[†] The finest ducks I ever tasted are, on that account, to be met with at Uppay, near Weymouth, in Dorsetshire.

[‡] It is well known that exercise produces firmness of flesh; this is particularly exemplified in the woodcock and the partridge. The woodcock is obliged to fly much about, while the partridge walks more and flies less, hence it is observed, that the wing of the woodcock is always very tough, while that of the partridge is very tender; and on the contrary, the leg of the woodcock is very tender, while that of the partridge is very tough Hence the old doggrel distich:

"If the partridge had but the woodcock's thigh,
He'd be the best bird that e'er doth fly."

[§] It is not improbable, that fish were, in some countries, the first species of animals used as food. The inhabitants of *Caramania* and *Gedrosia*, provinces of *Persia*, not only fed themselves, but their flocks, with fish; and disputed. According to some, it is the most delicious food of any; and according to others, it is without strength or substance*. Fish is certainly less nourishing than flesh. Its texture is more tender, and it has nothing of a fibrous structure. Hence being more easily digested, it is well calculated for those who reside in towns, and for sedentary people, who are but little benefited by air and exercise. But fish is not a species of food at all adapted for the laborious classes of the community. The nourishment it affords is incomplete, and not so stimulating, nor so congenial to the nature of man, as quadrupeds or birds.

Fish may be arranged into three classes: 1. Fresh-water fish. 2. Salt-water fish; and, 3. Shell fish. It is proposed merely to touch on some of the principal sorts of each species, and to add some general rules regarding their consumption.

1. The salmon, though it lives much in the sea, may be included among the river fish, being principally caught in fresh water. It is highly nutritious, but not easily digested, when bred in a turbid river; no food, however, can be more delicious than the small-sized salmon of a mountain stream. The trout and salmon-trout are more delicate, but not so nutritious. Eels are nourishing, but difficult to digest. Carp and tench are reckoned wholesome. The pike is a fish of prey, and hence called the water wolf. If not too large, nor too old, it is firm, palatable, and wholesome; but the greatest care ought to be taken to avoid swallowing the bones, which are sharp and forked, and of a texture so peculiarly hard, that they will not dissolve in the stomach, and are thence apt to occasion fistulas. This fact is not so generally known as it ought to be.

2. The salt-water fish are numerous, in general wholesomer than even river fish, and furnish abundant means of subsistence. Of these, the herring, the catching of which gives occupation to thousands, is the most important. The cod is a valuable fish, and, when fresh, furnishes palatable, digestible, and wholesome food. The whiting is tender and delicate, and may be given to the weakest stomachs.

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were, therefore, called by *Herodotus* and *Strabo*, Icthyophagi, or fish-eaters. The *Egyptians*, whilst the Israelites resided in that country, lived on fish; and the *Banians* eat no other animal food. It is fortunate to have such a resource in a populous country, where scarcities may occasionally occur.

* As a proof how little substance is to be found in fish, it is to be observed, that the jockeys, who to reduce their weight, *waste themselves* at Newmarket, are not allowed meat, nor even pudding, when fish can be got.

The haddock is firmer in its texture, and consequently less digestible. The mackerel is drier and less nutritious. The flounder tribe are of an oily and juicy nature. The common flounder and the sole are more tender; the turbot and the holibut more viscid. Mons. Gosse found that the solution of skate was very slow of digestion in the stomach; others have experienced the same circumstance in the use of the sturgeon.

3. Shell-fish are commonly accounted great delicacies' though not in general found digestible, and are therefore usually eaten with vinegar. In some constitutions they produce much heat, anxiety, and fever; and, affording perhaps the most viscid gluten of any of these foods, are with difficulty expelled by weak stomachs. The crab is so heavy, that it is seldom eaten without the addition of acids and condiment. The lobster and the shrimp are generally used in sauces. The cockle is rather insipid, and the muscle, though a savoury food, yet sometimes produces disagreeable consequences, but these, it is said, may be prevented entirely, by washing them well in vinegar and water. The oyster is considered to be a great delicacy, and many people can consume great quantities of them in a fresh or raw state. When dressed,they are less digestible. They form a very common mixture in the sauce of other animal food of an insipid nature, both fish and fowl*.

The following rules have been given regarding the consumption of fish. 1. Fish having a stronger tendency to putrefaction than meat, should be dressed as fresh as possible. 2. Fish should be eaten quite hot, and hardly ever, (oysters excepted), in a cold state, unless when pickled. 3. It is safer to live upon flesh meat than fish. 4. Fish, should not be eaten too often, nor after other solid food. 5. Some fish require more condiment than terrestrial animals; hence acids, fermented, and even spirituous liquors, are often requisite to assist their digestion. 6. Those kinds of fish, which are of an oily nature, as the salmon, the herring, &c. are more difficult of digestion than flesh, especially in weak stomachs. 7. Fish that have least flavour, that is, such as have least essential oil in them, are white, and have some degree of firmness, as the haddock, the whiting, the flounder, &c. will digest much sooner than such as are of a stronger flavour. 8. Fish is much improved by the addition of butter-sauce. 9. Fish and milk are seldom consumed together; nor are eggs used, unless with salt fish. 10. Great and slimy fish are better when pickled than fresh; and the clearer and deeper the water is, the better are the fish that are nourished therein. 11. Fish do not agree with vegetables, the potatoe excepted. Cullen says, that by way of experiment, he has taken apples after fish, but found that it disturbed digestion. 12. To those who live much on potatoes, a salted or smoked herring, will give an excellent relish to such insipid food. 13. Sea-fish are wholesomer, for they are hotter, than fresh-water fish, nor are they so moist, and their nourishment comes nearer that of flesh meat. 14. Of all sea and river fish, those are best that live in rocky places; next to these, in graveily or sandy places, or those produced in sweet, clear, and running water; but those fish are bad, that live in pools, muddy lakes, marshes, and in any still or muddy water. 15. Amongst all fish, both sea and river, the moderate sized are the best, also those that have not hard and dry flesh, that are crisp and tender, and have many scales and fins*.

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* Oysters are more easily digested when raw, than when dressed in any form whatever. They are reckoned nourishing, without being heating: and are very proper in consumptive cases, or for people who are recovering from a fit of sickness, whose, weak stomachs will not digest flesh meats, &c. No diet will sooner restore strength, than oysters and beef-steaks, from the great quantity of blood it produces.

4. *Amphibious Animals.*—The amphibious tribe used in food are not very numerous. The turtle or tortoise is the only one that merits any particular attention. Of the turtle, there are four sorts, but the sea or green turtle is the most common. The meat of this sort of the turtle is wholesome and delicate; and it resembles, in its salubrity, veal, or young poultry. When used in its natural state, it cannot fail to prove highly nutritious; but when changed by the refinements of cookery, and united with such a number of heterogeneous articles as are common in its dressed state, its nourishing qualities must in part be destroyed; and the only effects of its intended improvements are to excite fever, and to overload the stomach†.

5. *Miscellaneous articles, connected with Animal Food.*—Besides the food produced by the flesh of the animal, there are some articles of solid food derived from them, which it is necessary to touch upon: these are, 1. Butter. 2. Cheese. 3. Eggs; and, 4. Honey; and a particular species of nest.

1. Butter is a most valuable article. Cream, in a raw state, cannot be taken in considerable quantities, from its tendency

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* Lynch's Guide to Health, p. 192.

† Turnbull's Medical Works, p. 63.

to get acid and rancid, and being consequently difficult to digest; but in the form of butter, it may be used with advantage. Fresh butter, in particular, when carefully made, from the milk of a cow fed on natural pasture, is a most delicate sort of food. When melted, it is well calculated to accompany such vegetables as are naturally dry of themselves, for it gives them the properties of rich oily substances. Mixed with other articles, it makes an excellent sauce for various sorts of fish, more especially those of an insipid nature.

The use of butter is improper for children inclined to be gross and fat; but when they are brisk and active, a moderate use of fresh butter may be beneficial, as it checks that acid fermentation, which is generally prevalent in their stomachs at that period of life.

2. Cheese is used either as food or as condiment. As food, it is only suited to those who use great and constant exercise. It is not good for children; and those who have weak stomachs, should never use it without the addition of salt. The richer the cheese, the more nutritive it is, and when it is of a proper age, it is the more soluble. The lean is more difficult to digest. Cream cheese is very unwholesome, being liable to rancidity. When cheese becomes old and putrid, it ceases to be nutritive, and can only be considered as a condiment, or assistant to digestion.

3. Eggs contain a large proportion of pure nourishment, and are a most valuable species of food, not only when consumed by themselves, but when mixed with other articles. When new laid, they are peculiarly excellent; and those whose palates are not vitiated by luxurious indulgencies, cannot have a more delicate repast. They are injured by the access of air, which should be carefully guarded against. Eggs should be subjected to as little of the art of cookery as possible. They are sometimes *poached*, that is, boiled only as long as is necessary to coagulate slightly the greater part of the white, without depriving the yolk of its fluidity. In this way they sit easy upon most stomachs. Raw eggs are gently laxative, are serviceable in cases of jaundice and obstructed liver; are of use in bilious complaints, and yield more nourishment than boiled ones. But in general, a soft boiled egg is preferred, as excelling every other species of cookery; and furnishing an innocent and nutritious food*. The taste, the colour of the yolk, and even the nourish-

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* Falk's Guardian of Health, p. 130.

ment of an egg, depend upon the food given to the h
The best eggs are those from hens fed on wheat; next
that, on rice, barley, or potatoes.

4. Honey is a most valuable animal substance, though
does not agree with every stomach, yet where it do
it is most excellent food; and, in Sir John Pringle's opini
was entitled to be called, the juice of long life or imm
tality. An ancient philosopher, (Democritus), being ask
when he had reached one hundred years, how he had co
trived to live so long? answered, By the application of
without, and honey within. Pythagoras, noted for
great age, and the enjoyment of health with it, lived mu
upon honey; and both Pliny and Dioscorides call it *ut
senibus*[*], or good for the aged. It is sometimes used
medicine, as well as in diet.

5. There is a singular substance, a nest, consisting e
tirely of hardened gluten, which a species of swallow co
structs in hollow rocks, of sea-worms, and other gelatin
marine articles, which bears some affinity to isinglass, a
is esteemed a great delicacy by the Chinese, the Cochin C
nese, and the inhabitants of various islands in the Indi
ocean. They dissolve it in their broths and soups.

Observations regarding Animal Food in general.

To live on the substance of other animals, is by ma
considered to be unnatural. But there are numbers
creatures both on land, and in the waters, who must su
sist solely on animal food, not being able to procure veg
tables, or to eat them, if they could be procured. It w
therefore intended by nature that such food should be eate
It is likewise evident, from the structure of the hum
body, that it was calculated to be partly maintained
meat. Providence also seems to have intended other a

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[*] By putting a quantity of honey in a jar, which is hung suspended i
pot filled with boiling water, for a few hours, and skimming off the w
till it be completely pure, a very fine sugar of honey is obtained, which
person may eat safely, though he could not taste common honey.

[†] Dr. Franklin had for some time adhered closely to a diet purely ve
table; but in the course of a voyage he had taken from Boston to Phila
phia, some cod were caught, which were dressed on board, and the flav
of which seemed so delicious, that he broke through his vegetable syst
and ever after continued to eat like the rest of mankind, recurring o
occasionally to his vegetable plan. Some small fish had been found in
belly of the cod, which led him to reason thus: " If you eat one anothe
" see no reason why we may not eat you."—*Franklin's Life, written by
self*, p. 91.

mals for the use of man, from the astonishing increase of several sorts*; and as Pliny remarks, nature has shewn great kindness to us, in causing many creatures so well calculated for our food, to be so prolific. The custom likewise of eating animal food, has become so general, and is so deeply rooted in our habits of late, that it could not now be given up; nor without it, indeed, could so many millions of human beings, be maintained in bleak and northern countries, where the finer and more useful sorts of vegetables are reared with difficulty.

It is also to be considered, that if animals were not killed for food, we should lose a great number of the comforts of life. Besides meat, we obtain by the slaughter of animals, several most important articles, as leather for our shoes, and various other purposes, fat for candles, soap, &c. without which we should often feel the greatest inconvenience.

An ingenious poet, who grounds his doctrine on the highest of all authority, has well observed,

> " Nor the green herb alone,
> Unequal to sustain man's lab'ring race:
> Hence every moving thing that lived on earth,
> Was granted him for food†."

At first the flesh of wild animals would be thought of for subsistence, and they are still accounted wholesomer than the tame or domesticated, as they take more exercise, and feed without constraint, upon the articles they prefer. Their fibres, however, are more rigid and dry, whilst those of the domesticated kinds are more juicy and tender.

Wild animals being commonly killed in their blood, are thence apt to become soon putrid.

Those domesticated animals which feed themselves, and are fattened on their natural food, are justly supposed to afford more wholesome nourishment, than those that are stall-fed; because, being deprived of their natural exercise, their juices cannot be so well assimilated‡. Animals, in these days, are not so wholesome as formerly, from the practice of feeding them with oil-cake, and other improper foods, arts not formerly in use. To fatten animals, however, on proper food, cannot be objected to, as the flesh is thereby rendered more abundant, and nutritive.

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* The increase of the hog is very rapid. From a pair of rabbits, it is calculated that 1,274,840 may be produced in four years. The increase of the cod is still greater, for in a single roe of that species of fish, there are many millions.

† Somerville's Chase, book 1.

‡ Adair's Medical Cautions, p. 188. Cattle fed two years, though they have less tallow within, yet the flesh is finely marbled, and incomparably superior to what is hastily fed in a shorter period of time.

In the choice of animal food, we should always consider, whether it is in season or not, for the same sort of meat, which at one period of the year is good, may at another be hurtful. For example, pork is a wholesome food for many people in the winter season, but in summer, it is not fit to be eaten in a fresh state, unless particular attention has been paid to the feeding. By the arts of man, the other sorts of domesticated animals are equally fat at the different seasons of the year, though every person of delicacy of taste would prefer autumnal beef or mutton, fed on natural pastures, to those fattened in winter on turnip, and by other artificial means. The proper time for using the meat of each class of animals is, when their natural nourishment is in greatest plenty. As to that predilection for insipid premature meats, as house-lamb, so much the fashion with luxurious people, it does not seem to be well founded; for nature certainly destined that they should attain their proper growth by natural means, before they are used as food, either when young, or older, and their juices in that state, are more nutritive and invigorating[*].

Every animal destined for slaughter, ought to be killed unawares, and in its prime of health. When its blood is inflamed by over-driving, it must make unwholesome food, resembling carrion rather than sound meat[†].

It has been thought necessary to deprive domesticated animals, as much as possible, of their blood, when killed; as the meat is thereby longer preserved from putrefaction, though blood is not accounted an unwholesome article of food; but, by over-driving those animals toslaughter, the blood is so diffused in the cellular membrane, that it cannot be emptied by bleeding; and the meat is heavier, to the benefit of the butcher, but to the loss of the consumer[‡].

The custom of keeping meat for a considerable time, before we dress it, is with a view of rendering it more tender, palatable, and juicy, and easier of digestion. It is said, indeed, that a person may eat double the quantity of meat hung up for some time, without any prejudice to his stomach, that he can of meat fresh killed. When putrefaction has begun to take place in the meat, out of the body, it will doubtless sooner be digested in it. Such meat, therefore, may be well calculated for weak stomachs; but what it acquires in tenderness, it loses in its nutritive quality. Hence, meat long kept, is not so nourishing as that which is fresh killed.

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[*] Adair's Medical Cautions, p. 201.

[†] Falk's Guardian of Health, p. 122.

[‡] Adair's Medical Cautions, p. 274.

The French, it is well known, do not relish animal food, unless it partake strongly of the *fumette;* but they eat a considerable proportion of bread with it, and that, with their small wines, corrects the putrescency*.

Meat apt to putrefy, like the pigeon, is sooner digested than the duck, which is of a firmer texture, but in large quantities such meat cannot be recommended.

Some parts of animals are more tender than others, and more easily digested, as the head, the tongue, the udder, &c.; others are more difficult of solution, as the external muscles, the stomach, and liver. These last articles, however, are the most proper foods for persons of strong stomachs and quick digestion.

The essential oils of vegetables, are often agreeable to the stomach, and stimulate it, so as to forward digestion; but animal oils, though agreeable to the taste, are not equally digestible. Hence pork, geese, ducks, salmon, &c. containing much of this oil, may be acceptable to strong stomachs; but if eaten in too great quantities, or if the stomach be weak, they will disagree with it. Animal fat, however, ought not to be totally rejected. For, though oily matters, in large quantities, may óppress the stomach by their tenacity or viscidity, yet, as oil constitutes a very considerable part of our foods, both animal and vegetable, and as a large quantity of oil is deposited in various parts of the body, chiefly in the form of fat, it can hardly be conceived, that an article which is so predominant in our bodies, should be inimical to health†.

The digestibility of meat, depends much upon the nature of its fibres, and their being mingled with fat or otherwise. Hence beef is more difficult of digestion than mutton, the fibres of the one being grosser than the other. Animal food also, whose fibres have little fluid between them, that is dry meat, is more indigestible than moist. Thus, lean animals are harder of digestion than fat ones, and the lean part of fat meat, is easier of digestion than the lean part of lean meat[*]. Owing to the same circumstances, meat roasted a great deal, is not so digestible, as when done but little, the fluids being expelled by heat, and the fibres being compelled to approach closer to each other[†].

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* Adair's Medical Cautions, p. 202.

† Ibid. p. 283.

Adair has given two tables, of the relative digestibility of foods; and, on the whole, the arrangement is judicious[‡]. But there must be many exceptions, owing to various circumstances; for instance, in beef, 1. According to difference of breed, the meat of some, when fed for some time, being *marbled*, or the fat and lean mingled together, which is the most digestible meat of any. 2. According to size, the largest affording in general, the toughest meat. 3. According to age, young oxen, being more digestible than the old. 4. According to the mode of feeding. 5. The manner in which the animal is killed. 6. The time that the meat is preserved. 7. The manner in which it is dressed, &c.

In general, it may be observed, that animals, at their full growth, are easier of digestion than very young ones. Mutton, for instance, is easier of digestion than lamb; beef than veal; venison than fawn; and that on account of the viscidity of the flesh of young animals.

Comparison between Vegetable and Animal Diet.

Having thus endeavoured briefly to explain the various sorts of solid food, it may be proper next to consider, the general nature of the two great divisions of vegetable and animal diet, and the advantages of each.

Vegetable food is certainly the more ancient of the two; and indeed, as forming the food of the greater proportion of the animals we live upon, (fish excepted), vegetables, either directly or indirectly, are the principal sources of human nourishment.

In favour of vegetables it may be said, that man could hardly live entirely upon animal food[§]. Symptoms of putrefaction would soon oblige him to desist; and such food, if taken in too great quantities, would stimulate the system too much, render it weak, and hasten its decay.

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[*] Dr. Stark found, that the lean of meat is more digestible than the fat, which proves how well calculated fat meat is for the more laborious classes. There are some insulated facts regarding digestion, in his work, p. 94, which he would probably have brought into a regular system, had he fortunately lived longer.

[†] Easy Way to prolong Life, p. 86.

[‡] Adair's Medical Cautions, p. 165.

[§] It is said, that the Laplanders live for nine months in the year on rein-deer, and the Greenlanders on fish. It is possible, therefore, to live upon animal food alone. From its tendency to putrefaction, however, it must

Vegetable food also, is much better calculated for children, after they have done with their nurses' milk, and for young people in general, to whom too much meat is highly pernicious. Indeed there cannot be a better food for children than potatoes, oat-meal porridge, and the like.

Vegetable diet, when it consists of articles easily digested, as potatoes, &c. is likewise favourable to long life; at least when the aged live in a mild temperature; and take but little bodily exercise, that diet may be safely adopted.

It is farther to be remarked, in favour of vegetable aliment, that it has no tendency to produce those constitutional disorders, which animal food so frequently occasions. Any effects it may have on the body, are almost entirely confined to the stomach and bowels, and rarely injure the system at large.

The last argument in favour of vegetable food is, that it is considered to have a favourable influence on the powers of the mind; and tends to preserve a delicacy of feeling, a liveliness of imagination, and an acuteness of judgment, seldom enjoyed by those who live principally upon meat*.

There are many objections, however, to vegetable diet: as, 1. Its constant tendency to acescency, or sourness and tartness; which, to a certain degree, is useful to the animal economy, but when carried to an extreme, is highly injurious†. 2. Vegetable aliment also cannot, without

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produce disease; and if persons were to be confined either to animal or vegetable diet, the vegetable would certainly be preferable. It is said, that, during some periods of the year, the inhabitants of Cephalonia live wholly on currants, or a vegetable diet. Millions live only upon rice, and many entirely upon oat-meal, potatoes, or wheaten bread. It has lately been recommended to diabetic patients, to live entirely on animal food, but they find it almost impossible to continue that diet for any time.

* The celebrated Franklin, in his younger days, partly on the recommendation of Tryon, and partly on account of economy, took entirely to a vegetable diet. His frugal meal frequently consisted of only a biscuit, or a slice of bread and a bunch of raisins; or a bun from the pastry-cook's, with a glass of water; and he mentions, that his progress in study was proportioned to that clearness of ideas, and quickness of conception, which are the fruit of temperance in eating and drinking. See Life of Benjamin Franklin, written by himself, p. 39.

† Porous bread, or mealy potatoes, though specifically light, may not be easily digestible, if they turn readily sour; nor is liquid food from vegetables to be preferred to solid, from the idea of lightness, when it is likely to become acescent, as water-gruel.—*Beddoes's Hygëia*, vol. ii. Essay VIII. p. 70.

difficulty, be reduced to nourishment, or assimilated to the nature of man; an objection much felt by those who have weak stomachs, though the vigorous and robust are not affected by it. 3. From vegetable food, when thrown into the stomach, a considerable quantity of air is extricated, by which the stomach becomes distended, and much uneasiness is produced [*]. 4. Vegetable food is not so nourishing or invigorating as animal food.

Let us next consider what may be urged, first, in favour of; and secondly, in opposition to, animal food.

In the first place, it is observed, that man is no longer the child of nature, nor the passive inhabitant of one genial spot, but, as a citizen of the world, is exposed to constant toil and exertion; he requires, therefore, a more ready, condensed, and more easily assimilated nourishment, than vegetable food can bestow. In many situations, indeed, the vigour of his system is so weakened, by extremes of temperature, that the most stimulant and invigorating foods are necessary to counteract their injurious effects.

Vegetables are certainly of use, in order to fill the stomach and bowels, without which digestion is likely to be imperfect; a great part of our diet, however, should be solid, not only that we may be under a necessity of chewing it, to promote the process of digestion, but that the pressure of this solid food on the secretory vessels of the stomach, may stimulate them to discharge a larger proportion of the gastric juice and other humours, into the stomach and intestines [†].

Animal food is highly favourable to labour.—We can subsist longer upon it than vegetable; that is, we are sooner hungry after the latter, a proof that its nourishment is sooner exhausted [‡].

Animal food also, consists of parts which have been already digested by the proper organs of an animal, and applied to the same uses, consequently requires only solution and mixture, whereas, vegetable food must be converted into a substance of an animal nature, by the proper action of our own viscera, and, consequently, requires more labour of the stomach and other digestive organs [§].

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[*] A considerable quantity of air is extricated or let loose by the dissolution of vegetable food, by which digestion is promoted, but when carried to an extreme, as in the case of cabbages and other plants, or roots abounding with air, the result is injurious.

[†] Adair's Medical Cautions, p. 214.

[‡] Ibid. p. 282.

[§] Burton on the Non-naturals, p. 213. It appears, from the information

Those also live on animal food have more *bottom*, or can longer endure personal exertion, than those who live upon vegetables. This is particularly the case in war; and it gives to northern, with equal degrees of spirit or courage, a great advantage over southern nations.

Many objections, however, have been urged to the use of this species of food.

Animal food is, in one respect, more wasting than vegetable, for it excites by its stimulating qualities, a temporary fever after every meal, by which the springs of life are urged into constant, preternatural, and weakening exertions.

The late Sir Edward Barry prevailed on a man to live for eight days on partridges, without vegetables; but was obliged to desist, from the appearance of strong symptoms of putrefaction [*]. The result of this experiment shews, how necessary it is that animal food should be qualified by a due proportion of vegetables[†], as by a mixture of both, the blood best calculated to nourish, and strengthen the body, is formed.

Persons who live chiefly on animal food, whether fish or flesh, are subject to various fatal disorders; as the scurvy, malignant ulcers, and fevers; and are likewise liable to corpulency, more especially when united to inordinate quantities of liquid food.

As animal food fills the vessels fuller with blood than vegetable, it naturally increases our muscular strength; but then it loads the brain at the same time, which occasions heaviness and stupor; whereas vegetable food, from not loading the system with blood, rather diminishes muscular strength, but enables the blood to act with greater force. Vegetable food, therefore, is fitter for the studious, giving clearness of ideas, and animal food is best adapted for the laborious classes[‡].

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of a patient received into the general hospital at Vienna, with a perforated stomach, that flesh meat was constantly digested with expedition and ease, but that vegetables, in general, were much longer in undergoing this process.—*Beddoes's Hygëia*, vol. ii. Essay VIII. p. 19, & 20.

[*] Adair's Medical Cautions, p. 202.

[†] Ibid. p. 205.

[‡] The following are some, among the many admirable observations which Cullen has handed down to us, on the subject of animal and vegetable food. It is plain, he remarks, that delicacy of feeling, liveliness of imagination, quickness of apprehension, and acuteness of judgment, more frequently accompany a weak state of body. True it is, indeed, that the same state is liable to timidity, fluctuation, and doubt; while the strong have that steadiness of judgment, and firmness of purpose, which are proper for the higher and more active scenes of life. The most valuable state of the mind, how-

SECT. III. *The Means of preserving Food till it is consumed.*

SOME articles of food cannot be consumed too rapidly, after they are obtained. This is particularly the case with the more delicate substances, as eggs, milk, and butter, the class of fish, and the generality of the vegetable tribe. Some kinds of fruit may be excepted, as the pine-apple, the orange, and the pear, when pulled not perfectly ripe. Various articles of animal food, however, as has been already observed, are the better of being preserved for some time, at least in countries with a cold temperature. In the warm climates, indeed, where excess of heat renders the process of putrefaction immediate, the meat is used in its best state while it is yet warm, and almost before life is extinguished. In this country, on the contrary, on the extinction of life, a density, or firmness of fibre, takes place. Hence new-killed meat is hard, tough, and not easily broken down. This state, however, alters as soon as the process of putrefaction begins, which soon loosens the connexion of every part. No animal food, therefore, should be used in this country, until it has been preserved for some time, according to the coldness or the warmth of the season. In regard to wild animals, this rule is often carried so far, as to render them unwholesome, and almost unfit for use.

Men, however, soon become desirous, not only to preserve food for a few days, and to render it more palatable, but also to see the necessity of laying up, while they have it in their power, a store of provision for their future use, in order to prevent any risk of scarcity or famine. The various arts which have been discovered for that purpose, may be classed under the following general heads: 1. Drying in the sun. 2. Artificial heat. 3. Salting. 4. Pickling. 5. Preserving by butter. 6. Sugar. 7. Ice; and, 8. By various other substances.

1. The simple process of drying by exposure to the sun and air, was probably the first means thought of to pre-

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healthy serum, and discharge the superfluous quantities, while the other is oppressed, and variously affected by it. *Barry on Digestion*, p. 91.—Hence he contends, that animal diet, being more easily assimilated than vegetable, is better calculated for weak constitutions; and that persons with a strong constitution, who use much exercise, can best digest, and more safely live on a diet of the vegetable kind, and water for drink, than those of weaker stomachs. Ditto, p. 110.

both personal and mental, shall attain their highest state of perfection.

In regard to the proportion of this mixture; it cannot be very minutely ascertained. It must depend upon various circumstances, in particular, 1. The nature of the climate. 2. The occupation of the individual; and, 3. His bodily health.

1. In warm climates, it is admitted that a vegetable diet may be carried to great excess, without much inconvenience. Indeed, such climates produce the greatest proportion of vegetable food, and more of those spices, and other articles, by which the mischievous effects of that food can best be counteracted. In cold climates, on the other hand, there should be a greater proportion of animal food, as, from the want of heat, a greater stimulus is required for the system, and also from the smaller degree of perspiration, and little tendency to putrefaction which the fluids discover.

2. In regard to the second point, where little bodily exertion is employed, much animal food, fresh fish alone excepted, is improper in any climate, as it will load the body and oppress the mind; but where, on the other hand, bodily exercise is much employed, the use of animal food should be liberal, and even the vegetables used, must be of the most nourishing, or farinaceous sorts.

3. As to health, the conduct of the individual must be regulated according to circumstances. In the gout, for instance, a vegetable diet is in general to be recommended[*]; but sometimes an excess of animal food is necessary, when the disease is not regularly formed, to drive it to the extremities. In the same way, hysteric and hypochondriac complaints, from the disposition of the stomach to sourness or acescency, requires a diet of animal food, as the only means of alleviating the symptoms of these diseases; and it is well known, that the French are accustomed to take great quantities of bread, and dried, or other fruits, with their animal diet; and thus, probably, escape many of those disorders, by which the English are apt to be affected[†].

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[*] Mr. Slingsby lived many years on bread, milk, and vegetables, without animal food or wine; he had excellent spirits, was very vigorous, and was free from the gout ever since he began that regimen. Dr. Knight followed the same plan with equal success. See the Works of William Stark, M. D. p. 93.

[†] Barry observes, that the great difference between a strong and weak constitution is, that the former can assimilate food of a difficult digestion into a

made use of, must be a sapless, and unwholesome diet, drained of all its nutritive juices; living on such food, therefore, must exhaust the power and action of the stomach, and no proper supply of chyle can enter the circulation[*]. It is not to be wondered at, therefore, that persons living during a long voyage on such food, should be afflicted with the scurvy[†]. 4. For the use of working people, however, provisions lightly salted are preferable to fresh. The porters and coalheavers of London, who are obliged to devour great quantities of meat, as well as to drink great quantities of porter, in order to support themselves in the great labour and fatigue they go through, find it more salutary to live upon salt meat, which does not digest as soon as the fresh, and is not so apt to produce fluxes; and ploughmen, who have strong stomachs, and quick digestion, are more properly and more safely fed on rusty bacon, than on the more digestible foods, provided it is duly qualified by vegetables[‡]. 5. Cadogan asserts, that the same salt, seasoning, and smoke, which harden and preserve salted meats from putrefaction, before they are eaten, keep them from dissolution afterwards, so that they are never properly digested at all, nor is it possible that any good nourishment should ever come from them[§]. Dr. Falconer, on the other hand, observes, that many valetudinarians, whose stomachs could not bear a piece of veal, lamb, or chicken, from their flesh being of so viscid a nature, have easily digested a piece of ham or dried beef, which proves that salt meat is not so difficult of digestion as Cadogan and other authors have maintained[||]. 6. It is also urged in favour of salted meat and fish, that though they are less nutritive, yet they are more digestible, the salt increasing the stimulus on the stomach. This, however, is not the case, if they have acquired any degree of rancidity. M. Gosse found that fried bacon and eggs were very indigestible, the eggs, in particular, becoming highly alkaline in the stomach, yet lean salted beef proved easy of digestion. Salted meat, therefore, can only be very injurious, when, by long keeping, the putrescency of the meat prevails over the preserving power of the salt, and part of the salt becomes ammoniacal*.

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[*] This doctrine is enforced in Dr Wright's Directions to Officers going to the West Indies. See Part II. Chapter 8.

[†] Of old, from the great scarcity of winter food, the inhabitants of this country were obliged to salt their provisions, and lived, during the winter season, principally on salted meat, without much vegetable food. They were, of course, much afflicted with the scurvy.

[‡] Adair's Medical Cautions, p. 186.

[§] Cadogan's Dissertation on the Gout, p. 54. He goes so far as to say, (p. 58), that the substances we feed upon, ought all to be in a perishable state, otherwise they will never furnish the materials of good blood. Whatever is hardened or seasoned, so as to keep long before it is eaten, ought not to be eaten at all; for it will never dissolve in the stomach.

[||] Falconer's Observations on Cadogan's Dissertation on the Gout, p. 63.

4. Pickling is properly performed by the use of vinegar and aromatics†. It is applied both to animal and vegetable substances. In the first case, it is intended for food; in the second, as condiment or seasoning. Pickled salmon is an article of the first sort: when eaten cold, it is reckoned heavy, but it is a great improvement on that sort of food, to warm it again, by steam, or in hot water, when it resembles fresh salmon, with the addition of vinegar.

5. Many articles also, particularly fruits, are preserved by sugar, either in a dry or in a wet state. This includes a material branch of the art of the confectioner. M. Gosse found, that fruits boiled with sugar were very easy of digestion, and that any tendency to fermentation in fruits, was greatly corrected by the addition of sugar and spices.

6. The art of preserving meat, fish, &c. in ice or snow, has long been known, in various countries, as in Russia, Spain, and China, but has only been recently attempted in Great Britain. It has hitherto been solely applied to the conveyance of salmon from the remote parts of Scotland to London, a plan originally recommended by that respectable patriot, George Dempster, Esq. It is remarked, that unless the ice is very gradually dissolved, the fish is very apt to lose the firmness of its texture.

7. The principal difficulty in preserving meat, being the total exclusion of the air; one mode of effecting this, is by *potting*, as it is termed, the meat of fish being put up in

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* Adair's Medical Cautions, p. 204. It is impossible, however, to go so far as Bacon and Boerhaave. The first recommends flesh and fish rather powdered and salted, than fresh and hot. See Code of Health, 2d edit. vol. iii. p. 171; and Boerhaave, for prolonging life, prefers dry and salted meat, also salted and old fish, and in general every thing that is dry, hard, and tenaceous; grounding his opinion on this principle, that they resist more dissipation and putrefaction.—*De Dieta ad Longævitatem*, Num. 1057.

† Slight salting is also called pickling, but improperly. In Scotland, they use a very appropriate term for slight salting, they call it *powdering*, and sometimes *corning*. There is no better mode of eating boiled beef than in that state. That preparation called *brawn*, made from the flesh of an old boar, is obtained, by means of pickling with salt. It produces an article, insipid and horny, and which none but the strongest stomachs can digest.

pots of earthen ware, and covered with melted butter. This plan is not carried to any great extent.

8. Meat might probably be preserved in various other ways, as by means of gum, or by meal. It is well known, that a leg of mutton has been kept, for a length of time, in a fresh state, excluded from the air, by means of oatmeal*. It is said, that game or poultry may be long preserved, by tying a string tight round the neck, and excluding air. If any meat is tainted, a piece of charcoal, from three to six inches, should be wrapped in a piece of muslin, or thin linen, and boiled with the meat, and any putrefied taste or smell will thus be destroyed†.

There are few objects which require more public attention, than to ascertain the best means of preserving meat in a wholesome state, more especially for the use of our seamen, and for the lower orders of the community, to whom salted provisions are not only a safe, but a salutary source of aliment. By some discoveries, for which we are indebted to Mr. Appart, this has been brought to a considerable degree of perfection, and it will probably be still further improved‡.

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* Charcoal being a great enemy to putrefaction, I had imagined that meat might have been preserved by it, in a pounded state. But from an experiment made by Mr. Spence of Drypool, Hull, it appears, that though antiseptic substances, such as charcoal, may depurate recently tainted meat, and preserve dead animal matter in a fresh state for a short time, yet that they cannot be substituted for salt, since, being capable merely of external application to the surface of the substance to be preserved, they are not able to prevent a new chemical arrangement of its parts; salt, on the contrary, being intimately combined with every particle of the meat, effectually hinders such a chemical change. Nor did the nitrate of silver (the lunar caustic of the shops) answer better in solution with water. In a very short time, or in less than two months, the meat put in the solution was in a high state of putrefaction.

† A haunch of venison, highly tainted, has been restored, so as to be fit for use, by being repeatedly rubbed with charcoal. Tainted fish, also may be much improved, by mixing a considerable quantity of vinegar and salt in the water in which they are boiled.

‡ See "The Art of preserving all kinds of Animal and Vegetable Substances for several Years, written by M. Appert, translated from the French," second edition, one volume, octavo, printed in 1812. The process principally consists in attention to the following particulars: 1. Putting the substances to be preserved in bottles. 2. Corking them with the greatest care. 3. Submitting these inclosed substances to the action of boiling water, in a water bath, for a greater or lesser length of time, according to their nature; and, 4. Withdrawing the bottles from the water-bath, as soon as the process is completed. Messrs. Donkin, Hall, and Gamble, (Blue-Anchor Road, Bermondsey, Southwark; also, at 50, Lombard-street, London), have greatly improved the process, using tin canisters of different sizes, for meat, instead of bottles.

SECT. IV. *The Cookery, or the Mode of preparing Food for Consumption*[*].

IT is probable that man originally ate both vegetable and animal foods in a crude state; and to this day some of the African nations, the Esquimaux Indians, the Patagonians and Samoeides, devour raw flesh and fish, and drink the blood of the animals. Such a mode of living produces, it is said, great bodily vigour, ferocity of mind, and love of liberty[†].

In general, however, animal food undergoes some preparation before it is consumed. It is hardly to be credited what expedients some tribes have resorted to, in order to obtain that object, as putting heated stones in the bellies of pigs to roast them, or burning the straw in order to parch the grain. From these humble attempts, the great refinements of cookery, and the art of making bread, originated.

It is certain, that cookery is an useful art. By it many articles are rendered wholesome, which could not otherwise have been eaten; but by it likewise, many articles are rendered unwholesome, which would otherwise have produced nourishing food.

Cookery may be considered under two general heads, the simple, and the refined or compound.

The first, though apparently easy, requires a considerable degree of attention and experience; and the second is an art of so diversified and extensive a nature, that it is rarely carried to any considerable degree of perfection; and it would have been no loss to human nature if it had never been invented[‡].

Simple cookery includes the following modes of dressing meat: 1. Roasting. 2. Boiling. 3. Stewing. 4. Broiling. 5. Frying. 6. Baking; and, 7. Digesting.

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[*] It has been remarked, that the subject of cookery, and the circumstances on which mixtures of different articles of food are in some cases admitted, and in others are condemned, have never been treated of in a scientific form, nor explained on chemical principles. It is an inquiry of a very extensive nature, and might be considered under three divisions: 1. As applied to the preservation of health. 2. To the counteracting of disease; and, 3. To the relish of the palate: though the last belongs more properly to the cook, than to the man of science. See Nisbet's Practical Treatise on Diet, printed at London, an. 1801, a most useful compilation on that subject. If such a work were undertaken, it ought to be extended, not only to kitchen, but to *table cookery*, including the nature and uses of the different condiments, and explaining the medical arrangement of dishes; at what seasons the different sorts ought to be taken, and the effects of the mixture of different kinds.

[†] Adair's Medical Cautions, p. 272. The famous philosopher Zeno, the first of the Stoic sect, and others, have lived on raw meat. Diogenes, however, it is said, fell a sacrifice to that practice.

[‡] Adair, in his Medical Cautions, p. 172, (note), says, that Dr. Saunders proposed to publish an essay on the present modes of cookery, pointing out

1. Roasting was certainly the first mode invented to prepare animal food; for boiling was a more complicated process, and required the art of manufacturing vessels that could withstand the effect of heat.

Roasted meat, at least of the larger kinds, as beef, mutton, and venison, is preferred in England, and boiled or baked meat in France. The meat of England has not always the same high flavour as that of France; but it is larger, richer, and fatter, and appears to most advantage in a roasted state. Besides, coal fires are better adapted for that process of cookery, than wood or peat. It is found, indeed, that meat roasted by a fire of peat or turf, is more sodden, than when coal is employed for that purpose.

Our meat in England, Cadogan asserts, is generally overdone, and particularly over-roasted*. This doctrine, however, is denied by Falconer. He admits, that meat little done is the most soluble; but, at the same time, contends, that it runs quickly into putrefaction. Hence the French, who live in a warm climate, find it necessary, not only to eat a great quantity of bread, to prevent the putrefying effect of animal food, but also to have their meat thoroughly boiled and roasted†.

2. Boiling is also an excellent mode of preparing animal food, rendering it more soluble, without destroying, if properly done, its nutritious qualities, and being peculiarly calculated for weak stomachs‡. But, however useful moderate boiling may be in these respects, yet, when carried

the impropriety of certain mixtures and ingredients in our modern dishes. As Dr. Saunders was so well qualified for the task, it is unfortunate that his intentions were never carried into effect. It shews the propriety of an author endeavouring to complete a work as soon as possible after he has undertaken it.

* Old and full grown animals, may be safely eaten when under-roasted; but not young meats, as veal, lamb, pig, &c. Unless they are thoroughly roasted, they are apt to make the person who eats them sick, unless he has very strong digestive powers.

† Falconer's Observations on Cadogan's Dissertation on the Gout, p. 64.

‡ Some medical writers have rested much upon the dietical difference between roasted and boiled meats; but the only difference is, that by the force of a roasting, or frying fire, the elements of animal substances are formed into a kind of vinegar; and thus, roast-meat may be said to make its own *sauce piquante*. The pungent taste of the brown outside, depends upon the newly formed acetous acid, which will certainly offend a weak stomach. The inside of roasted meat, differs in no material respect from the boiled; but the boiled, from wanting this sour incrustation, is of a milder nature, and with its own gravy, is the best food for the weak and the dyspeptic.—*Manual of Health*, p. 312.

to such an extreme, that every thing soluble is extracted, the nutritious parts are conveyed to the liquor, and the meat itself becomes insipid, and almost devoid of nourishment.

Young and viscid food, as veal, chickens, partridges, &c. are more wholesome when thoroughly roasted than boiled; but beef and mutton are easier digested when boiled than roasted*; consequently, boiling such meat, is better calculated for weak stomachs.

Boiling is particularly applicable to vegetables, rendering them more soluble in the stomach, and depriving them of a considerable quantity of air, so injurious to weak stomachs.

The usual mode of preparing fish for the table, is by boiling, roasting rendering them more indigestible.

3. Stewing is reckoned the mode by which the greatest quantity of nourishment is obtained from meat. By this plan, the texture of the meat is rendered more tender, its soluble parts are not fully extracted, and it is left in a state abundantly sapid and nourishing, while the soup also, or fluid, contains a sufficient proportion of the animal extract.

4. Broiling consists in exposing meat to the near application of a naked fire, by which means, its outer surface immediately hardens before the heat has penetrated the whole. This prevents any excess of exhalation, and the meat, when done, is rendered sufficiently tender. It is peculiarly suited for beef-steaks and mutton-chops, which are, comparatively speaking, eaten in a juicy, and almost a raw state, and which are easily digested.

5. Frying is a process that renders meat more indigestible than any other; and thence, by some would be included under the head of compound cookery†. It is performed by cutting meat into thin slices, and putting it in a vessel over the naked fire. As the lower surface of the meat would thus be burnt or hardened, some fluid matter, generally of an oily nature, is introduced, which acquires, from the heat, a burnt or empyreumatic taste, and becomes hardly miscible with the fluids in the stomach. It requires, therefore, the addition of stimulants to enable the stomach to digest it‡.

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* Easy Way of Prolonging Life, p. 41.

† In a recent work, published it is said, under the auspices of a respectable physician, a mode of *frying* beef-steaks is mentioned, (Culina, p. 39), which the author observes, cannot be considered otherwise than as a dish prepared to satisfy the appetite, and not to pamper it. In that case, frying ought to be included among the branches of simple cookery.

‡ Fried meat ought to make the least part of salutary diet, because the

6. Baking consists in the application of heat in a dry form, the meat being put in a vessel covered with paste, instead of its being exposed to the open air. Any considerable exhalation is thus prevented, and the meat, by the retention of all its juices, is rendered more sapid and tender. But baked meat sits heavy on some stomachs, from the greater retention of its oils, which are in a burnt state. It requires, therefore, the additional stimulus of spices and aromatics, to assist the powers of the stomach to digest it.

7. Digestion is the last discovered process of simple cookery. It is performed in a close vessel, and resembles boiling, being conducted in a very high temperature, while, from the closeness of the vessel, the advantages of stewing are procured. It is not, however, much in use.

Besides these various simple modes of preparing animal food, there is another, which it may be proper here to take notice of, namely, when animal food is dissolved in water, and formed into a gelatinous solution or jelly*. This substance is of a viscid nature, and though it contains much nourishment, yet it is difficult of digestion, and, of course, less calculated for diseased or weak stomachs than is commonly imagined. Nor are those jellies, which are the mucilaginous extract of certain parts of animals, as hartshorn, very digestible; indeed, a too liberal use of them has often proved injurious†. They can only be recommended for the sick, accompanied with a quantity of stale bread. To those who require any article of that sort, more especially if their stomachs are weak, simple beef-tea, properly prepared, is the most nutritive balsam that can be administered‡.

One would imagine, that all the various modes of preparing food above enumerated, might satisfy the most luxurious appetite; but, instead thereof, the ingenuity of man has been exerted, to discover a number of other preparations. Hence, a system of refined, or compound cookery,

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flesh which is dressed in this manner, undergoes a much more violent heat than that which is boiled; for oil requires six hundred degrees of heat by the thermometer, to make it boil, whereas water will boil with two hundred and twelve degrees; so that the salt and oily parts of the meat, are made so much more acrimonious by the intenser heat.

* Some French physicians have recently recommended what they call *gelatine*, or compact animal jelly, as a remedy more efficacious than the bark, in most diseases where that substance is administered; but its powers have not fully answered the expectations entertained. A calf's foot for supper, without any sauce, is found as beneficial as the gelatine.—*Pinkerton's Recollections of Paris*, vol. i. p. 301.

† Adair's Medical Cautions, p. 197.

‡ Falk's Guardian of Health, vol. i. p. 177

has been invented, more flattering to the palate, than favourable to the health.

It would be improper to touch upon processes, which it is impossible for any writer on dietetics to mention with any degree of approbation. Some dishes may be prepared variously compounded, which may occasionally be tasted, and plain sauces may be an useful addition to fish and vegetables; but the generality of ragouts, made dishes, and the like, are of a pernicious quality, and cannot be too cautiously avoided by those, who entertain any anxiety for the preservation of their health.

Before this subject is dismissed, it may be proper to consider the mode of preparing two important articles, namely, bread, and that valuable root the potatoe.

*Bread**.—On this subject, it is proposed to give some general remarks: 1. On the various articles employed in the making of bread. 2. On the various modes of manufacturing it. 3. On the various sorts of wheaten bread. 4. On the advantages resulting from its use; and 5. On the rules that ought to be adopted regarding its consumption.

1. Bread is not only made of all the various sorts of grain, but also of chesnuts, and other sorts of nuts; of roots, as the potatoe, &c.; of fish, dried and ground into meal; of flesh prepared in the same manner; and even of the bark of trees, &c.† But grain is the proper substance of which bread ought to be made; and wheaten bread is by far the most perfect.

2. Bread may be manufactured in three ways: leavened, unleavened, and soured. Leavened bread is subjected to the process of fermentation, either naturally, by the addi-

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* The best work on the art of bread-making, is a treatise drawn up by Mr. A. Edlin, printed at London, one volume octavo, anno 1805. It begins with explaining the natural history and cultivation of wheat; the nature of the corn trade; the analysis of wheat-flour; the analysis of yeast; the theory of the fermentation of bread; substitutes for wheaten bread, &c. On the subject of substitutes, he does justice to the experiments made by the Board of Agriculture: Posterity, he says, will thank them in terms of the highest approbation, for having turned their attention to the great question of substitutes for wheat in the manufacture of bread; and the great variety of experiments they made, to ascertain the respective qualities of barley, rye, oats, buck-wheat, maize, rice, beans, and potatoes. It is very improbable, he adds, that such another opportunity will ever occur again.—*Edlin's Treatise on the Art of Bread-making*, p. 97 and 98.

† See Lemery on Foods, translated by Hay, p. 95.—This must be done, not for the sake of nourishment, but for supplying a dry food, and distending the stomach.

tion of some old paste, or leaven to the new paste, which makes it undergo the fermentative process; or, by the addition of barm or yeast. The first plan is generally adopted in foreign countries, and the second in Great Britain.

Unleavened bread consists of a mixture of meal and water, formed into a firm and tough cake, made as thin as possible, to favour its drying; and sometimes with the addition of butter, to render it more soluble, friable, and porous; but it renders the bread sourer, and is apt to produce heart-burn.

Of the unleavened sorts of bread, biscuit is by far the best; and, in all cases where leavened bread does not agree, it cannot be too strongly recommended. In equal quantities, it is more nutritive than fermented bread; it is also lighter, and less liable to create acidity and flatulence.

In some of the interior counties in England, where their bread is often manufactured from oat-meal, they have a mode of preparing that meal for the manufacture of bread, by making it sour; the bread, instead of being hard, is thus rendered of a soft texture, and, from its moderate acidity, it is wholesome[*]. By the same mode, barley-bread has been made; and, with a small proportion of yeast, has formed a species of food that might please the most delicate stomachs. There is not the least occasion, therefore, when any scarcity takes place in this country, to introduce such quantities of foreign wheat, when we have oats, barley, and white pease of our own produce[†], that might answer the purposes of aliment, much better than the miserable and unwholesome trash which we are too apt to receive from foreign countries, and by the mixture of which, our own wheat is so often contaminated.

3. The different sorts of wheaten bread may be considered under three classes; fine bread, coarse bread, and rolls. The finer sorts of bread are certainly the most indigestible, and consequently are best calculated for strong stomachs; they ought only to be consumed, therefore, by the laborious, and not by the luxurious or the sedentary

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[*] It resembles what is called sowens, or oat-meal flummery This article is prepared by letting oat-meal and water stand together till the liquor becomes acidulous, when it is poured off, and boiled to a jelly. Pringle and Blane relate, that, in several instances, the scurvy has been prevented and cured by this preparation alone.

[†] The mixture of white pease meal is an improvement on bad flour; and when barley or big is made into pot or pearl barley, it yields a very fine species of flour, which, *when baked with milk*, can hardly be distinguished from wheaten flour.

classes of the community. Coarse or brown bread, made of the whole flour unsifted, is infinitely preferable for weak or delicate stomachs. Rolls, and other sorts of bread commonly used at breakfast, have all the bad effects of new bread, unless they are particularly well baked, and are therefore to be accounted rather unwholesome. It is said by some, that bread made of different kinds of grain, is more wholesome than what is made of only one sort, as their qualities serve to correct one another. For example, wheat flour, especially the finer kind, being of a starchy nature, is apt to occasion constipation. Bread made of rye-meal, on the other hand, proves often too laxative for the bowels A due proportion of each, therefore, makes the wholesomest bread.

4. Various reasons are assigned by physicians, for the use of bread in diet. If flour were used with water in a raw state, it would be found so glutinous, as to clog and cloy the stomach: it is therefore converted into bread, to take off this viscidity. When fermented, it is better calculated to correct the putrescency of animal food. Fermented bread, likewise, being of a spongy nature, soaks up the fluids of the stomach, and facilitates digestion*. It is necessary to have something solid in the way of food, which may continue a permanent action on the stomach, when introduced into it, and without which, fluids, however nourishing, are never satisfying to the appetite. The mastication of dry food also, is the means of bringing a certain quantity of saliva into the stomach. Without bread, indeed, animal food would soon become loathsome to us, from its tendency to putrefaction. Its use is suited to every season, age, and temperament; and, on that account, it may be properly called the universal aliment, or *staff of life*†.

5. Several rules have been given regarding the use of bread, in particular the following: 1. Bread should be kept till it is rather stale; or, if it is consumed when fresh, it should either be thoroughly baked or toasted. 2. The external surface, or crust of bread, is most easily digested; but it contains less nourishment than the softer part, or crumb. 3. Fermented bread should not be given to children, for the first six, eight, or ten months, according to their strength: biscuit-powder, in small quantities, is an excellent substitute. 4. The proper quantity of bread for full-grown persons, must be regulated by the age, sex,

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* Easy Way to prolong Life, p. 18.

† Falconer's Observations on Cadogan's Dissertation on the Gout, p. 77.

constitution, and mode of life; but, in general, our solid food may be consumed in the following proportions: One third of animal food, another third of greens, and other vegetables of a similar nature, and the remaining third of bread.

One of the most important questions on the subject of bread is, whether it should form so great an article of food, with the lower orders of society, as it does in England. Bread certainly is one of the most expensive modes of using grain, and not adapted to their narrow means, being burdened with two heavy additional charges, when passing through the hands of both the miller and the baker; and, owing to that circumstance, it is often adulterated. It has therefore been recommended, to use boiled grain instead of bread*. Pot or pearl barley, is admirably calculated for that purpose, insomuch that it is justly entitled to the name of *European rice*, and may be used in the same manner, both simply boiled, or converted into puddings. In addition to this, let the poor use biscuit for any temporary use, when it may not be convenient to dress other sorts of victuals. These articles, with potatoes, would enable them to live much more comfortably than they do at present.

Potatoes.—Next to bread, there is no vegetable article, the preparation of which as food, ought to be more attended to, than the potatoe. If properly dressed, it furnishes not only a wholesome, but a most acceptable repast. It is not to be wondered at, that, for a long time, it should not be much relished at the great tables in London, as the cooks were accustomed to pare them, as they did turnips, previous to their being boiled, which deprived them of their most nutritious particles, and rendered them a most insipid and tasteless mess†. It is a good plan, first moderately to boil, and then to roast them, which gives them, in some measure, a chesnut taste; but simply boiling or steaming are the most general modes of preparation.

In regard to boiling potatoes, it is of consequence that they be as nearly as possible of one size; that they be well washed and cleared of earth or dirt; that they be put with cold water into a pan or kettle, well rinsed about, and kept there for an hour or two, which will extract the black liquor with which they are impregnated. They ought then to be put, not into boiling water, like greens, but into fresh cold water, with a little salt, and boiled in a kettle or goblet, closely covered, in the most expeditious manner possible. No more water should be put in than merely to cover them, as they produce themselves a considerable quantity of fluid. When sufficiently done, the water *to be instantly poured off*, and the kettle, containing the cooked potatoes, to be placed on the side of the fire, with the cover off, until the steam be completely evaporated; the potatoes are thus rendered *quite dry and meally*, before they are sent to the table[*].

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* Buchan's Domestic Medicine, p. 624.

† In Flanders and in Holland, the same practice prevails, but their potatoes are in general waxy, and consequently not so easily skinned. They say likewise, that nothing is lost, as they give the parings to their cattle.

As to the converting potatoes into bread, though that may be effected by various processes[†], and more especially by the mixture of different sorts of flour, yet they answer the purpose of food equally well, plainly boiled or roasted, without all the trouble of such conversion.

Sect. V. *The Seasoning, or Condiments with which the various sorts of Food are usually accompanied.*

In the more refined periods of society, a number of articles are made of, known under the name of condiments, or seasoning, which answer the purpose of decorations to the table, and are of use with some kinds of food. Pliny condemns them as highly pernicious; but he probably alluded to the feasts of Apicius, and other luxurious Romans of those times, who carried seasoning to excess. In a moderate degree, and with some particular articles, they are beneficial.

The use of condiments, seems to have been first suggested by a sense of oppression in the stomach, when languid, and clogged by insipid foods. With food, their uses are various. They sometimes ameliorate the taste of various

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[*] See the Farmer's Magazine, vol. v. p. 191, and 503.

[†] M. Parmentier observes, that potatoes contain too much mucilage in proportion to their starch, which prevents them from being converted into good bread. But that if the starch be collected from ten pounds of raw potatoes, by grating them into cold water, and agitating them, and if the starch thus procured be mixed with other ten pounds of boiled potatoes, and properly subjected to fermentation, like wheat flour, that it will make as good bread as the finest wheat.—*Darwin's Zoonomia*, vol. i. p. 655.

Arrow-root, to the amount of about one ounce to four pounds of potatoes, and as much flour, answers much better.

od, as broths, porridge, &c. would be without it, and
ow grateful a small portion of salted fish is, to many of
ose who live entirely upon vegetable diet. Lastly, a mo-
rate use of salt, is very proper to protect bodies, through
hich it passes, from corruption, and it must, therefore,
e of great use, mixed with our blood, in preserving it, and
r other fluids, from putrescency, more especially where
uch animal food is consumed*.

On this subject, it may be proper to add, that salt is
ore necessary with fat meat than with lean; and that it
ught to be used sparingly, by young, florid, and hale
eople, as it heats and creates thirst.

2. Sugar is a substance whose taste and properties are
ell known. It is nutritious, antiseptic, and laxative; but
eing of a very fermentable nature, it is apt to produce
atulence, heat, and thirst, in many constitutions. It is
ixed as a condiment with a variety of articles, as straw-
erries, melons, &c. Many fruits are preserved by it; and it
an essential article in many dishes, as tarts, puddings, &c.

That sugar is not unwholesome, (indeed many consider
as the principal source of nourishment), is evident, from
arious particulars. It agrees remarkably well with some
nstitutions; and Slare, in its defence, quotes the cele-
ated example of Mallory, who was a great lover and eater
sugar, and who, after cutting a fresh set of teeth at past
rscore, lived to about one hundred years of age†.

. Vinegar, when taken moderately, can neither be im-
per nor unwholesome. It gives a grateful taste to se-
l kinds of aliment, that would otherwise be apt to pall;
gently stimulates the stomach, so as to excite appetite.
moderately antiseptic, and probably, by that quality,
tes the putrefactive tendency of flesh diet, and is in
way an antiscorbutic. When in a perfect state, or
so, vinegar is safer to use as an acid condiment, than
f the recent juices, as lemon, &c. having already gone
h the vinous fermentation. It can have no bad con-
ces in the blood vessels, as it is easily subdued by
gans of assimilation‡.

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use of salt is strongly objected to by Dr. Cleland, in his Institutes of
Appendix, p. 34), and he states, that the celebrated Boerhaave,
examination, thought it of no manner of service to the animal eco-
d, therefore, recommended that no more of it should be used than
st required to give a relish. But whoever considers the observa-
ined in the text, will probably be of a different opinion.

eland's Institutes of Health, App. p. 38.

ll known, that the soldiers of Rome and Carthage used vinegar

Acids assist digestion merely, and afford no nourishment, unless the juice of sour fruits furnish any. Acids are sometimes employed to create an appetite; and, for that purpose, lemonade is sometimes taken before dinner in hot countries, where, owing to an increased circulation in the skin, the internal circulation is diminished, and of course, the stomach weakened.

But the principal use of acids is, to be eaten with animal food. Thus, lemon or vinegar is an excellent addition to fish; and shell-fish in particular, ought never to be eaten without some acid, being in their nature so extremely viscid, and, without that addition, indigestible and unwholesome. It is for the same reason that we use acids with veal, lamb, and other young animals, namely, to correct their viscidity, or glutinous nature.

The French use vinegar more liberally than we do; and it is a very proper sauce for their meats, which they generally eat in a putrescent state. Their vinegar is much more genuine than ours, which is frequently adulterated with oil of vitriol*. Of all acids, vinegar, provided we attend to its quality, is the safest.

4. The hot or spicy condiments form a numerous tribe. They are powerful stimulants, that is to say, they increase the action of the stomach: And, as digestion partly depends upon the contracting power of the stomach, when that organ is weak, it is necessary to have some article that will stimulate it to action. Of these, the different kinds of pepper may be considered as the chief; and they are of the greatest service in the warm climates, to enable the body to resist and support the exhausting influence of the sun. In mild climates, however, they are less required; and though used with greens and other vegetables, to correct their flatulent tendency, yet, on the whole, they are better fitted for languid and debilitated stomachs than for

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and water as their common drink; and every soldier was obliged to carry with him a bottle of vinegar, to correct the qualities of any unwholesome water he met with in his marches. This beverage was found of singular service, in preventing fevers, plagues, and putrefactions, and in giving a stimulus to the water they drank, by which it was prevented from lodging in the body.—See Cheyne on Health, p. 58. Also Jackson on Fevers, p. 407. ---Too free an use of vinegar, however, is certainly destructive to the stomach; and, by the abuse of that article, when slenderness of waist was particularly in request, many women totally ruined their digestive faculty. The nitrous acid is a much safer prescription.—*Beddoes's Hygëia*, vol. ii. Essay viii p. 50.

* Adair's Medical Cautions, p. 239.

those of a hale and sanguine habit*. The Cayenne is the most stimulating of all the peppers. But many consider capsicum and Cayenne pepper, in moderation, to be the best and safest article of the sort, the stimulus from them being temporary, whereas that from East India spices is more permanent, and found to be exceedingly hurtful in many constitutions. Ginger is an agreeable and wholesome aromatic, preferable to most other spices, as possessing little acrimony, and consequently, rarely known to irritate and inflame. Cinnamon is a delicate and wholesome spice, and is much used for procuring an agreeable taste to various kinds of aliment †. The clove is a hot and stimulant aromatic, having a smell peculiarly grateful; and is considered to be, in various cases, an useful stimulus to the stomach, and system in general. The nutmeg is a strong pungent aromatic, of an agreeable flavour, but the least wholesome of all the spices, the essential oil which it possesses, being of a narcotic nature. Mace, which is the skin or covering that immediately invests the nutmeg kernel, possesses the same general properties. Cardamoms, cubebs, and other spices but little in use, need not be dwelt upon.

On foreign spices, in general, it may be observed, that they are all the products of hot climates; and, therefore, more suitable condiments in those countries than in this; a fitter addition to vegetable than animal foods; and more proper for languid and debilitated constitutions, than those of a hale, sanguine habit ‡. It is also to be remarked, that they are better calculated in this country for summer than for winter, more especially with flatulent vegetables, as greens, pease, &c. with a view of increasing the action of the stomach, and to bring on digestion before that fermentation takes place, which, in weak stomachs, would be attended with extrication of air. Of spicy stimulants in general, it is to be remarked, that when carried to excess, they deprave the organs of digestion, and provoke them to crave much more food than it can properly digest.

There are three articles, however, of a hot nature, produced in this country, and in great perfection, which ought not to be omitted; these are, mustard, horse-radish, and caraways. The two former are less stimulating than spices, and are therefore employed, with greater safety, as condiments, in temperate and cold climates. They are chiefly employed along with animal food, but may also be used with vegetables. They not only stimulate the stomach, and assist digestion, but also promote perspiration, and the other secretions, and obviate a putrescent tendency in the system; hence they are best suited to be used with animal food, as the aromatic spices are the proper condiments for vegetable.

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* It may be proper to take pepper with vegetables, but to use it with animal diet is undoubtedly superfluous, and probably prejudicial. The mode on the Continent, of keeping pepper in open cellars, instead of covered boxes, as practised in England, is extremely absurd, as its strength and flavour are thereby lost.

† Powdered cinnamon, however, ought to be cautiously taken by people of weakly habits, as it is apt to occasion costiveness.

‡ Adair's Medical Cautions, p. 229.

The use of mustard, is extremely ancient. Hippocrates mentions it in his treatise on diet, and Aretæus recommends it to be taken liberally with food, in cases where other stimulants are forbidden. He is very lavish in his praises of it, for its good effects in expelling flatulence, and promoting digestion. In France, where they pay such particular attention to every thing connected with the table, mustard is celebrated as by far the best of all the stimulants, as agreeing with every species of food, promoting digestion, augmenting the elasticity of the fibres, increasing the dissolving juices of the stomach, and doubling their force; and particularly calculated for the aged, or those whose stomachs and bowels are weak, or embarrassed with viscid matter[*].

In regard to the caraway, among all the native spices, there is none which excels it in medicinal virtues. The seeds of this plant are the mildest and most useful carminative[†] we possess. To people of a weak digestion, troubled with flatulency and colicks, they will often afford relief, if used in sufficient quantity; for instance, a table-spoonful at a time, early in the morning, and an hour before a meal; or, still better, if these seeds are plentifully used in bread, and among cooked victuals. Yet persons of a hot and bilious temperament, and individuals liable to obstructions, and habitual costiveness, ought not to use these seeds indiscriminately, nor without consulting a professional person.

Caraway-seeds, finely pounded, with a small proportion of ginger and salt, spread upon bread and butter, and eaten every day, especially early in the morning, and at night before going to bed, are successfully used in Germany, as a domestic remedy against hysterics.

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[*] Almanac des Gourmands, 2de année, p. 93.

[†] Carminative is a term applied to those substances which allay pain, and dispel flatulencies of the *primæ viæ*.

If caraways are kept in a pounded state, they soon turn rancid, on account of the strong oil they contain[*].

The plants of the garlic kind, so often used as condiment, have already been taken notice of amongst the articles of vegetable diet. In regard to the spicy sweet herbs produced in this country, as thyme and sage, they are principally used as condiments in soups and broth. In small quantities, they give energy to the digestive organs, especially in phlegmatic and corpulent habits. They are also less liable to adulteration than foreign spices; but, if take too freely, they are apt to excite heat and thirst.

5. Salad oil is the chief of the oleaginous condiments, and in the countries where it is produced in perfection, the consumption is very great, answering the purposes of butter. It is of a mild and bland nature, with little odour or taste. When used in salads, or as a seasoning for raw vegetables, it checks their fermentation in the stomach, and thereby prevents them from being too flatulent. When thus employed, in small quantities, it assists digestion; but, when taken in large quantities, it cloys the appetite, and lays a foundation for bilious complaints, more especially with weak stomachs.

Melted butter is another oleaginous condiment. It makes a proper, and not an unwholesome addition to boiled vegetables, and to various sorts of fish; but it frequently disagrees with weak stomachs, more especially when the quality of the butter is indifferent, or when it is improperly melted.

It would appear, from Dr. Stark's experiments, that excess in the use of oleaginous substances, is more hurtful to the body, than an excess in any other article of food, and that we ought to be particularly careful, in regulating the quantity, and attending to the quality of the oils we employ in diet[†].

6. There are various combinations of the condiments above detailed, with other articles, but the two principally used are known under the names of catsup and soy. The first is prepared from the juice of mushrooms, submitted to a putrefactive fermentation, and in that state, salt, vinegar, and aromatics, are added to it, when it becomes fit for use. Soy is a preparation from seeds produced in the East Indies,

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[*] Willich's Lectures on Diet and Regimen, p. 431.

[†] The Works of William Stark, M. D. p. 143. Oily substances, however, are of great use to the body. See that subject explained in Falconer's Observations on some Articles of Diet and Regimen, p. 25, 26, &c.

submitted to fermentation in a strong solution of common salt. It possesses, therefore a saline taste, with little aromatic flavour. Both these articles are better calculated to please the palate, than to promote health[*].

It is justly remarked, that seasonings and sauces ought not to be much indulged in by young stomachs, and strong healthy bodies, who require no spur to their appetite, nor help to digestion. But these helps should be reserved for age, deficiency of appetite, and other infirmities, otherwise that benefit and assistance will not be received from them, which might have been experienced, had the use of them been forborne when they were not necessary[†].

7. The miscellaneous condiments consist of two articles, olives and cheese.

Olives are considered as a condiment with us; but they are a food in their native soil. They are best in their pickled state, as they then lose much of their bitterness and acrimony. From their oily nature, they are improper for delicate stomachs.

Cheese of a rich quality becomes highly putrid or alkalescent when it gets old, and therefore, it is a good condiment after a dinner of insipid meats.

8. Under the head of condiment, perhaps *the use of ice* may be included, as it gives a coolness and relish to our liquid food, and is a kind of seasoning to fruit. On this subject, it may be observed, that though, in some countries, and for some constitutions, the prudent and moderate use of ice may occasionally be proper, yet in general, it produces more injurious than beneficial effects[‡].

On the whole, the subject of condiment is both curious and important; and it may be observed, that these seasonings, when taken in small quantities, merely to give tastefulness, or sapidity to the food, certainly have a tendency to increase the appetite, to favour a proper quantity of aliment being taken, and to promote digestion; but where they are taken immoderately, they tend to weaken the stomach, to occasion acrimony in the fluids, and to produce a general irritation in the whole system.

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[*] Curry powder might likewise be included among the compound condiments.

[†] Mainwaring on the Preservation of Health, p. 63.

[‡] See Valangin on Diet, p. 115. This intelligent author there mentions the case of a nobleman, whom he describes as being in every respect a manly character. He was a great advocate for the cold bath, and, in general, for every thing that could harden the body; and imagined that cold, *applied internally*, must be as salutary as when applied externally. He often drank his liquors out of ice, and eat plentifully of ice-creams of various kinds. After having one day taken a greater quantity of these than usual, a fatal inflammation, which at once affected the stomach, the intestines, and the kidneys, notwithstanding the assistance of three of the most eminent physicians, who did not leave him an instant, made him fall a victim to this his favourite opinion.

SECT. VI. *The times of Eating, and the sort of Food best adapted for each Meal.*

NOTHING proves more clearly, that man is the child of custom, than the various systems which have been adopted regarding the times of eating, and the number of meals per day. Some recommend no regular plan whatever, but to eat when hungry, and to drink when thirsty; but this rule can only be adopted in very particular circumstances, where individuals live alone, have nothing to think of but themselves, and have a diet prepared for the purpose. They may then indulge their appetites when they think proper*. In all numerous families, however, regularity is indispensible. Indeed in this, as well as in other respects, nature delights in having stated periods for carrying on its operations†.

Besides, man is a social animal; and when there is abundance of food, he relishes it much more, when he partakes of it in company with others, than when he devours it in a cold and melancholy manner by himself.

Those who are young, and in a state of perfect health, may take liberties as to diet, both in regard to time and quantity. But when persons are advanced in years, and the body becomes infirm, a certain, habitual, approved, and wholesome, mode of living ought to be adopted, and followed from day to day, periods of disease alone excepted‡.

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* Dr. Franklin knew a gentleman who had been a slave in Barbary, and was allowed only a certain quantity of barley, which he took with him every morning to the quarries where he was employed. He there found water to drink. His practice was, to eat a little now and then, whilst at work; and, having remained many years in slavery, he had acquired so far the habit of eating frequently, and little at a time, that when he returned home, his only food was gingerbread nuts, which he carried in his pocket, and of which he eat from time to time.—*The Works of William Stark, M. D.* p. 92.

† The stomach thus gets into the habit of a regular time for evacuation, a point of infinite consequence.

‡ See Kant's Treatise on the power of Resolution over Disease, Code of Health, 2d edit. vol. iii. p. 254. Those who have weak stomachs, as Darwin justly remarks, vol. i. p. 454, will be able to digest more food, if they take their meals at regular hours; because they have both the stimulus of the aliment they take, and the periodical habit, to assist their digestion.

But, though regular meals are desirable[*], it has been much disputed, how many should take place in a day, some preferring one, some two, some three, some four, and some even five meals daily. The diversity of age, sex, constitution[†], climate, and customs, will make a surprising difference in this respect. In general, it is advisable, not to make the distance between the meals too great. The body will thus be regularly supplied with nourishment[‡], and no unusual craving or debility will ensue.

As it appears from experiments, that food rarely remains longer than six or seven hours in the stomach, our meals ought to be regulated by this circumstance; an early breakfast and dinner, will enable us to make an early supper; and, by this means, the extremes of repletion, and long fasting, may be avoided[§].

Some nations have been satisfied with one meal a day. But the stomach would thus be oppressed with too great a quantity of food, and, in the interval, would suffer from the want of some nourishment in it. Indeed, such a plan is neither calculated for persons of a strong constitution, and engaged in much labour and exercise, who require large supplies, nor for those of a weak constitution, who are not able, either to *take* or to *digest*, such a quantity of nourishment in a single meal, as will be sufficient to supply the *waste* of the body, and more *equally* to support the strength and spirits for twenty-four hours[||].

Celsus recommends it to the healthy, to take food rather twice in the day than once[¶]; and there are few who take solid, or at least animal food oftener.

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[*] The periods of hunger and thirst become catenated with certain portions of time, or degrees of exhaustion, or other diurnal habits of life. And if the pain of hunger be not relieved by taking food at the usual time, it is liable to cease till the next period of time, or other habits recur.—*Darwin's Zoonomia*, vol. i. p. 451.

[†] Bilious people, with a boldness of temper, and inclined to anger, cannot endure fasting; for the bile, with which they abound, is a strong, sharp, and stimulating dissolvent, which should always have something to act upon. It is, therefore, advisable for them to eat often, and little at a time, or to take four meals a-day.—*Valangin on Diet*, p. 116.

[‡] Many suffer from the irregularity of meals, more especially those who are concerned in great public affairs; as the Judges, the Members of both Houses of Parliament, &c. They are so taken up with these weighty concerns, that they cannot find a moment's time to take any nourishment, for many hours, almost for a whole day.—*Valangin on Diet*, p. 151.

[§] Adair's Medical Cautions, p. 280.

[||] Barry's Observations on the Wines of the Ancients, p. 221.

[¶] See Grieve's Celsus, cap. i. p. 23.

The Romans, in the most luxurious periods of their empire, took five meals a day. The supper, however, was the great meal, which consisted of two courses, the first of meats, the second seems to have been what we would call a dessert.

The English, of old, had four, and sometimes five meals a day[*]. They breakfasted early; they dined about eleven or twelve o'clock, and had at least two meals after. One of the maids of honour at the court of Henry VIII. had five meals a day, three of them with meat[†].

Some modern epicures are not satisfied with a number of meals in the day, but fill up their intervals with a variety of supplementary articles, as soups, jellies, &c. so that the stomach is never empty, and of course, cannot duly perform its office of digestion, nor supply the animal machine with proper nourishment in a regular manner. No wonder, therefore, that persons who follow such a system, should feel languid and oppressed, instead of being recruited and invigorated by a hearty dinner[‡].

Having premised these general observations, we shall now proceed to consider the subject of meals, according to the usage of modern times, under the following general heads. 1. Breakfast. 2. Dinner. 3. Supper. 4. Intermediate meals. 5. Rules to be observed at meals; and, 6. Subsequent to them.

1. *Breakfast.*—In the morning, the body, though refreshed by sleep, yet must often feel weak and languid, from the long period of fasting during the night. A supply of nourishment, therefore, is necessary at breakfast, one, two, or three hours after we get up, according to the hour of rising. The solidity of this meal should be regulated by the labour or exercise to be taken, and by the time of dining. Considering the lateness of the dinner hour, according to the modern fashion, the breakfast should be made a more nutritious meal than it generally is[§], and rather resembling

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[*] Dr. Mouset gives the following curious description of the Old English style of living. If our breakfast, (he says), be of liquid and supping meats, our dinner moist, and of boiled meats, and our supper chiefly of roasted meats, a very good order observed therein, *agreeable both to art, and the natures of most men.*—*Health's Improvement*, printed at London, anno 1655.

[†] See the Bill of Fare, Adair's Medical Cautions, p. 275.

[‡] See the Invalid, by A. Nonagerian, p. 4.

[§] What a contrast, as to the breakfast, between the ancient and modern times! A maid of honour, in the court of Queen Elizabeth, breakfasted upon beef, and drank ale after it; whilst the sportsman, the mechanic, and even the day-labourer, now breakfast on tea.—*Adair's Medical Cautions*, p. 256.

the Scotch than the English fashion, or what the French call un *dejeuner à la fourchette*. It should be a constant rule with persons in a weak state of health, to take, if possible, some animal food, or a fresh egg, at breakfast.

With respect to the bread at this meal, it should be either stale or toasted, or used in the form of biscuit. The addition of unmelted butter with the bread, is to be recommended, with tea and coffee, but not with chocolate or milk. The butter is improved by being a little salted, otherwise it soon becomes rancid and unwholesome.

Breakfast may be said to be the most natural of our meals, and that for which a temperate person ought to have the greatest relish; because, many hours having intervened from the last meal, and sleep and perspiration being favourable to digestion, if that has gone on properly, we ought to have a keen appetite for our breakfast[*].

Some have recommended *a dry breakfast* as peculiarly wholesome; and this plan is sanctioned by the example of the celebrated Marcus Antoninus, who was accustomed to eat a hard biscuit for his breakfast, the moment he got up. This practice is said to be of use in catarrhous defluxions, occasioning a copious admixture of the saliva, and absorbing the night-remains of unconcocted phlegm in the stomach[†].

In Scotland, it is not unusual to have at breakfast what is called *marmalade*, or the rinds of the bitter orange preserved with sugar. Owing to its bitter quality it promotes digestion. The practice, also, of eating this preserve at breakfast, may tend to qualify the enervating effects of tea.

Milk thickened with rennet, called in the western counties of England *junket*, when the whey and curd have not been separated, is an excellent breakfast[‡].

Infusions of balm or sage, or chamomile tea, at breakfast, are objected to, on the ground that a constant use of aromatics or bitters is very injurious to the stomach, and ought to be only occasionally taken as a medicine[§].

2. *Dinner*.—Among the Romans, dinner was regarded, by healthy and temperate persons, rather as a refreshment, to prevent any uneasy sensation to the stomach from fasting, than as a meal, or source of nourishment. It consisted chiefly of some light repast, without any animal food or

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[*] Adair's Medical Cautions, p. 258.

[†] Cleland's Institutes of Health, p. 42.

[‡] Beddoes's Hygëia, vol. ii. Essay viii. p. 67.

[§] Adair's Medical Cautions, p. 333.

wine*. But, in modern times, it is accounted to be the most important action of each day; and no wonder that it should be considered in that point of view, if M. Grimod's opinion is well founded, that five hours at table, *is a reasonable latitude for dinner*, when the company is numerous, and the feast abundant†. The hour of dinner is now so much protracted, that it corresponds with the usual time for the suppers of our ancestors. This fashion, however, of protracting the principal meal to so late an hour, destroys the tone of the stomach, and proves the source of many of those stomachic complaints, which affect men of business, and those in the higher ranks of life; and the meal also is more indulged, than if it had taken place at an earlier hour; the stomach, in consequence, becomes over distended; the process of digestion, which ought, if possible, to be effected before, is not completed at the hour of repose, and a restless night, and an unpleasant morning, are the necessary consequences‡.

As every species of luxurious gratification, or what in France is called the *sçavoir vivre*, together with the *iatrical*, or medical arrangement of dishes, has been carried to greater perfection in that country than in any other (insomuch, that it is said, the cooks must have consulted intelligent and beneficent physicians in that arrangement), it is proposed, therefore, to give a short account of the dinner in France, extracted from the author who has most recently discussed that subject§.

A great dinner, according to Grimod, in his Almanac des Gourmands, (whose opinion is considered to be conclusive in such matters), ought to consist of four services: 1. The soups, the *hors d'œuvres*, *relevés*, and *entrées*. 2. The roast meats and salads. 3. The cold pastry and *entremets*; and, 4. The dessert‖.

During winter, a good French dinner often begins with oysters, which are uniformly accompanied with white wine, especially Chablis, particularly agreeable on that occasion. The use of red wine with oysters, would show a great want of *sçavoir vivre*, and is even pernicious to the health, as it generally produces indigestion.

There is no French dinner without soup at the commencement, which is regarded as a necessary preparation of the stomach, for the due digestion of more solid food*. It is commonly followed by a libation of ordinary wine, the *coup d'après*, which is considered so wholesome after soup, that the proverb says, the physician thus loses a fee.

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* Barry on the Wines of the Ancients, p. 236.

† Almanac des Gourmands, p 123.

‡ Turnbull's Medical Works, p. 40.

§ Pinkerton's Recollections of Paris, vol. ii. p. 182, 211.

‖ Ibid. p. 211.

' The soup is constantly followed by boiled beef, (the *bouillé*), which is, however, sometimes preceded by anchovies, to stimulate the palate and appetite.

Small plates of radishes, eggs, &c. with butter of Bretagne, in little pots, form what are called the ***hors d'œuvres***, or extraordinaries; but the delicious pastry called ***petits patés***, usually follow the boiled beef.

The *hors d'œuvres*, are followed by *entrées* of fowl, in various shapes, fricassees, fricandeaux, cutlets, sweetbreads, &c.

The vegetables are served apart, and eaten by themselves.

A great singularity of the French table is, that fish is served late, and not always at the same time, for they in general bring together all the boiled articles, whether fish or flesh, and all the roasted articles of both sorts. Sometimes fish dressed warm, may be eaten in the course of the second or third service; but the fish is often cold, and accompanies or follows the roti. This custom is said to be more agreeable to the stomach, than our fashion of beginning with the fish, which the French consider to be a crude food, of little nutrition, and often of difficult digestion, not being much acquainted with the superior sorts produced in other places, nor how much better they are consumed in a hot, than in a cold state.

In consequence of this arrangement, and the aid of a variety of the most generous wines, that France, Spain, Hungary, or other countries can produce†, the consumption of the table is very great; and, it is said, that a person who leaves England with so weak a stomach, that it has long refused the luxury of two dishes, may, without inconvenience, taste of twenty at a French repast.

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* It serves also another purpose, that of filling the stomach, and preventing excess in the use of solid animal food.

† The use of *liqueurs*, or ardent spirits at dinner, is not always adopted by the French. The dram immediately before dinner, usual in Russia, &c. or what they call *le coup d'avant*, they consider only calculated for northern climates. *Le coup d'après*, or a glass of pure wine after soup, they think an excellent practice; but, *le coup du milieu*, or a glass of Jamaica rum, &c. between the roasts and the *entremets*, to give a fresh stimulus to the appetite, though recommended by Grimod, (see Almanac des Gourmands, 2de annee, p. 24, 25, 195), is not generally in use.

All this must be very acceptable to those to whom the pleasures of the table are a favourite, and perhaps a pre-eminent object; but it cannot ultimately tend to promote health or longevity.

In regard to dinners in this country, they are in general too quickly gone through; too much meat is put upon the table at once, and sufficient time is not allowed to masticate the food properly; nor should each division of dishes be hurried upon the table, as well as from it, but an interval allowed for conversation, to give the stomach some rest, and not to overload it too much at once, which necessarily occasions a defective digestion.

2. *Supper.*—In the time of Queen Elizabeth, the nobility and gentry were accustomed to dine at eleven, to sup between five and six*, and go to rest at ten. Hence, in summer, they could comply with that well-known advice, *after supper walk a mile*, in order to quicken digestion, and dispose the body for rest. But as our dinners are now prolonged to five or six, a regular supper is generally given up†. Some slight repast, however, is commonly prepared, as eggs, milk, or vegetables. To invalids, boiled sago, or other articles of the same sort, may be given. In favour of light suppers, it may be observed, that Cardan said, he had conversed with many persons who had lived to be an hundred years of age, and who all declared to him, that they made it a rule to eat little at night.

If breakfast is a meal of friendship, dinner that of etiquette, and the luncheon that of youth, the supper may be called the feast of love and wit; at least the delicious suppers for which Paris was formerly so much celebrated, were entitled to that name, when every thing the most amiable in that great metropolis, all the elegance of the court, all the talents of the learned, and all the beauty of the fair, were united together, in the luxurious sanctuaries of splendid opulence‡.

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* Hume's History of England, vol. iv. 464, note 8.

† The ancient physicians, Hippocrates, Celsus, and Galen, were all in favour of light dinners and substantial suppers, alleging, that foods are sooner, and more perfectly digested, when we are asleep than waking, and that the space between supper and dinner is double of that between dinner and supper. But it has been properly answered, that when we are asleep, foods float less in the stomach, and that the animal functions are in a great measure at rest. It is also to be observed, that we waste much less when we are asleep, than when we are awake and in motion; and that sleep is the proper time for assimilation, and not digestion.

‡ Almanac des Gourmands, p. 65.

In regard to suppers in general, it may be observed, that though the laborious ploughman may indulge with impunity, in a plentiful supper, yet indolent persons of fortune, whose dinner cannot be completely digested, must be oppressed by it; hence interrupted sleep, and a determination of the blood towards the head. Instead of a supper, therefore, any good ripe fruit of the season would be very salutary, preventing costiveness, and keeping the bowels free and open; also cooling, correcting, and carrying off the heats and crudities of former indigestions. Lettuce also, has been recommended, from its soporific qualities.

4. Many persons avoid eating between breakfast and dinner; on the supposition, that it would spoil their appetite for that favourite meal, even though the interval is sometimes eight hours*. This is very injurious, particularly to invalids. Persons with weak stomachs should never fast, in the day-time, above six hours, more especially if acid abounds in the stomach. It is an excellent practice, for persons of that description, to take a little soup, with toasted bread, about one or two o'clock. By taking food frequently, the stomach is less oppressed, and performs its office more completely, the fever of digestion is diminished, and too much chyle is not sent into the circulation at once, which, by its stimulus, excites a kind of temporary fever, which certainly retards the nourishment of the body. Such

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* Strong objections have been made to the modern system of meals; and the following observations upon that subject, coming from the pen of the Reverend Dr. Gregory, merit attention. In a communication to the author of this work, he observes,—"There is one circumstance I cannot omit in this case, because, I am convinced, it deserves most serious consideration. The late dinner hours of persons of fashion, I am convinced, are destructive of both health and longevity. Our wiser ancestors divided the day into nearly equal parts, by the principal meal. Several good effects were the consequences of this arrangement. The stomach was not left empty by a long fast, and the gastric fluid was not left to act upon the coats, possibly the nerves of the stomach, and destroy its tone; but what is of more consequence, long sittings after dinner were not indulged in, but all the gross effects of this meal, (if there were any), were wrought off, and digestion promoted, by wholesome exercise. From my own experience, I can aver, that moderate exercise, is a greater promoter of digestion, than rest; and I think I could assign physical reasons for it. As it is, see what are the consequences,—they are either a long fast, or that another meal is added to the course of the day, and a long sitting, and intemperate use of wine indulged in, during the afternoon and evening. I do not think that it is well to sleep with the body overcharged, as it is in the progress of this regimen. Hence the frequency of those diseases caused by what Brown terms indirect debility, and particularly apoplexy and paralysis."

a slight repast also has a tendency to prevent repletion from excess*.

The meal called *tea*, is principally of use, as tending to put an end to the destructive practice of sitting too long at table after dinner; and either tea or coffee, when properly prepared, must be more favourable to digestion, than strong or intoxicating liquors†.

It was formerly a custom in England, after their early suppers, to have what they called *a posset*, consisting of milk, bread, and eggs, sugar, and spice, and some sorts of liquids. But that custom is now happily exploded.

5. *Rules at Meals.*—It is much disputed, with what sort of food, whether liquid or solid, meals ought to begin; but, on the whole, it appears most advantageous to begin with the most liquid, as mild broth, or soup, by which an inordinate appetite for solid animal food is restrained; for when that is indulged in, excited perhaps by provocatives, and followed up by the use of strong liquors, it must ultimately tend to produce indigestion, and to abbreviate life.

The English mode, however, of sitting long after dinner, and drinking a variety of strong wines, and often to excess, cannot possibly be approved of. The introduction of tea has greatly contributed to diminish that practice.

6. *Rules after Meals.*—A variety of contradictory rules have been given, regarding the conduct to be pursued, subsequent to the different meals. The interval betwixt breakfast and dinner, is the proper period for exercise; and the enjoyment of it, in a moderate degree, will strengthen and invigorate all the powers of life. It particularly promotes the appetite, and increases the circulation. After so solid a meal as dinner, however, all violent labour or exercise ought to be avoided, until what is called 'the fever of digestion' is over. With active people, and those of strong habits, the intromission of an hour may be sufficient; but with the weak and delicate, no strong exertions ought to take place for a much longer period.

In warm climates it is not unusual to sleep after eating, a practice, the propriety of which shall be afterwards discussed. (See Chapter VI. on Sleep). It is so general in those countries, that it must be found of service; but with us it is certainly unnecessary, and ought never to be given way to, unless where persons are either in a weakly state, or in advanced years. Under such circumstances, a short sleep will permit the digestion to proceed uninterruptedly, and the nourishment to give its full supply to every part, before it is again dissipated by the action of the body[*].

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* Adair's Medical Cautions, p. 328.

† In the Code of Health, 2d edit. vol. i. p. 377, there is detailed an excellent mode of making coffee, drawn up by a noble friend of the author's, (David Steuart Erskine, Earl of Buchan), which being now so well known, need not be here reprinted.

General Result.—The subject of meals being of considerable importance to health and longevity, it may not be improper to sketch out a plan, more likely than the present, to promote such important objects; and the following hints for that purpose, are submitted to the reader's consideration.

The hours at which the different meals ought to be taken, must vary according to the season of the year, and the hour of rising. On the whole, the following seems to be a rational mode of living, for those who prefer health to fashion[†].

In summer, rise about seven; breakfast about nine; take a little fruit, a crust of bread, or a biscuit, or some potatoes and boiled milk, about one; dine between four and five, so as to take some exercise in the cool of the evening; take tea or coffee, as is found most agreeable to the constitution, between eight and nine, and if any supper, strawberries, or any of the smaller fruits. Go to bed about ten.

In winter, rise about eight; breakfast about ten; *take a slight repast*[‡] about two; finish all the business of the day, and take a substantial dinner between five and six; take tea or coffee about nine; no supper. Go to bed between ten and eleven.

In spring, the hours ought gradually to tend to the summer system, and in autumn, to that of winter.

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[*] Turnbull, in his Medical Works, vol. i. p. 43, observes, that sleeping after dinner in warm countries, is only to be condemned when it is carried too far. That it may be necessary, when the body is enfeebled and enervated by the relaxing influence of a burning atmosphere. Where the diet also is of a vegetable kind, it is more difficult to have it completely assimilated.

[†] Where there is a large family, and the children live much with the parents, the hours must be altered, if residing in a town, to suit their hours of education.

[‡] The *luncheons* with meat, not in a cold state, but newly roasted, so common in high life, are much to be condemned. They are, in fact, early dinners; and, if justice is done to the real dinner afterwards, the stomach must be oppressed. A little light soup, and toasted bread, or well boiled potatoes, with a little milk, is all that should be taken. To fast, from breakfast to a late dinner, is highly improper.

SECT. VII. *The Quantity of Food that ought to be taken at the different Meals; with some Observations on Abstinence, Temperance, and Excess.*

AN intelligent author has justly remarked, that good health depends on a proper quantity of food, and a just proportion of the meat to the drink [*]; and it cannot be doubted, that among the higher orders of society, almost all the chronical diseases, many of the infirmities of old age, and shortness of life in general, are owing to repletion. In polished nations, indeed, men commonly eat at least double the quantity of food necessary, and often four or five times more than they ought to do.

The amount of food to be consumed, must certainly depend upon various circumstances, more especially on the exercise or the labour undergone; in other words, different quantities are necessary for those who lead, 1. A sedentary life. 2. A life with exercise; and, 3. A life of labour.

1. Cornaro found, that twelve ounces of solid food, and fourteen ounces of wine, or twenty-six ounces in all, was as much as he could consume with safety; and when he increased the one to fourteen ounces, and the other to sixteen, even that moderate addition occasioned severe illness [†]. Another respectable individual, who tried experiments with diet in the 64th year of his age, adopted the following plan [‡]. He took for

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[*] See Robinson's Dissertation on the Food and Discharges of the Human Body, p. 61.

[†] See Code of Longevity, vol. iii. p. 63. On the whole, too much stress seems to be laid on the doctrines of Cornaro. Feyjoo remarks, that God did not create Lewis Cornaro to be a rule for all mankind in what they were to eat and drink. The learned Jesuit Lessius, who translated the Treatise of Cornaro from Italian into Latin, was so strongly persuaded by it, that he had bound himself under the same restrictions. He, however, lived only to the age of seventy-nine, and that with many disorders which he laboured under. To one man, like Cornaro, who lived an hundred years with such strict diet, we may oppose a great number of others, who have lived much longer, without all these scruples. His constitution required such abstinence, which few others might be able to bear. *Father Feyjoo's Rules of Preserving Health*, p. 82.—Cornaro tells us, that in order to preserve his health, he not only resolved to restrict himself, as to the quantity of his liquid and solid food, but carefully to avoid cold, fatigue, grief, watchings, and every other excess, that could hurt his health. How could the business of the world be carried on, if every man, like Cornaro, were to begin following that system at the fortieth year of his age?

[‡] See Robinson's Dissert. p. 62, 63, and Table 2.

		Ounces.	
Breakfast,	Bread and butter, ...	4	
	Tea in dilution, ...	8	
			12
Dinner,	Bread, ...	2	
	Meat, ...	12½	
	Water, ...	4	
	Claret, ...	16	
			34½
Supper,	Water alone, ...		12
	Ounces, (or 3lb. 10½ oz.)		58½

But he afterwards reduced his food to fifty-three ounces per day, at a medium, principally by diminishing the quantity of water he had been in use of taking.

There is certainly no individual who ever tried a course of severe experiments on diet, with more attention, or with greater anxiety to be of service to human nature, than Dr. William Stark, whose premature death is much to be lamented, as it is not likely that any other person will arise, of equal intelligence, and equal ardour, in the pursuit of useful science, and equally ready to risk his life, for purposes of public utility.

It is impossible even to give a short abstract of the various experiments he tried, and the results of them; but it appears, that the utmost quantity of bread that he could eat in one day, when he took no other aliment, was forty-six ounces, and that the greatest quantity he could eat at one time, without uneasiness, was twenty ounces. For some days he eat only twenty ounces of bread per day, and took four pounds of water; and, though he was hearty, and in good spirits, he found it necessary to increase the allowance, not only as he fell away, but was often very hungry *.

Dr. Cheyne has made a calculation of the quantity of food sufficient to keep a man of an ordinary stature, following no laborious employment, in due plight, health, and vigour; and he recommends eight ounces of flesh meat, twelve of bread, or vegetable food, and about a pint of wine, or other

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* The Works of William Stark, M.D. p. 98, and 99. The public are much indebted to Dr. Carmichael Smith, for this useful publication.

generous liquor, in the twenty-four hours. He adds, that the valetudinary, and those employed in sedentary professions, or intellectual studies, must lessen this quantity, if they would wish to preserve their health, and the freedom of their spirits long *.

But, on the whole, for sedentary people, the following quantities may be recommended. For breakfast, four ounces of bread and eight of tea, or some other liquid; for dinner, four ounces of bread, eight of meat, eight of water, and twelve of wine, or some generous liquor; and for supper, eight ounces of liquid food, making in all three pounds four ounces, at the rate of sixteen ounces to the pound.

2. Those, however, who take moderate exercise, will require fuller diet; the amount of which must greatly depend on the quantity of exercise they take. When moderate exercise is taken, an addition of one-third, or about seventeen ounces, making in all four pounds five ounces, may be allowed; but when violent, it may require one half additional, or twenty-six ounces, in all, four pounds fourteen ounces; that, however, ought to be sufficient.

3. With a life of much personal labour, a still greater quantity of food is necessary to recruit the exhausted frame; and it is incredible how much some persons are said to have consumed. Those who are employed in common labour, however, may be satisfied with double the quantity allotted to the sedentary, or, in all, of prepared food, six pounds eight ounces, and thence to seven, or, with great labour, even eight pounds, of solid and of liquid food; one third of which should be solid, and the other two thirds liquid nourishment.

The only intention of these observations is, to give some data for reflection. It is in vain to suppose, that men, in these respects, will be tied down to any specific rules, or that they will take the trouble of weighing their food, or measuring their drink; but if a certain quantity of each is fixed upon, as a general average, the eye will soon be able to determine about the quantity that ought to be consumed.

Considering the excess that is so often committed, in regard both to solid and liquid nourishment, it is a matter to be wondered at, how so many luxurious people have lived so long, and apparently in good health; but for that, various reasons may be assigned. 1. They commonly take a good deal of exercise, more especially on horseback, which enables them to digest their food. 2. They have, in general,

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* Essay on Health, p. 34.

the advantage of abundance of good fruit, another great help to digestion. 3. Their stomachs are strengthened, and their blood cooled by ices, which, in these respects, may be of service. 4. They have the best of wines; and knowing the importance of that article, they spare no pains or cost to secure those of the finest quality, more especially of that sort that agrees best with their stomach. 5. If unwell, they are generally in that situation in life, that they can have the advice of the ablest and most skilful physicians. 6. To the misfortunes of others, even their nearest relations, they become perfectly callous. 7. They seldom give way to any anxiety regarding their own private affairs, if by any means they can procrastinate the evil hour. 8. In regard to public concerns, however calamitous they may prove, they hope for better times; and, Lastly, they acquire many useful habits, in regard to cleanliness of person, &c. some of which shall be afterwards explained, (See Part II. Chap. IV.) which materially contribute to the preservation of their health.

Before the subject of the proper quantity of solid food is dismissed, it may not be improper to make some general observations on, 1. Abstinence. 2. Temperance; and, 3. Gluttony, or excess.

1. It is well known, that in some countries, occasional abstinence is enforced by law; and by several authors, it has been celebrated as a most judicious regulation. It would, no doubt, be advisable, occasionally to abstain from food, or at least to reduce the usual quantity, as a means of preserving health, when persons, living in the usual state of European society, must often indulge more than is necessary. I knew a person of great literary eminence, (John Home, the author of Douglas), who lived only occasionally in London, and bore, without inconvenience, the luxuries of that capital, by following one rule, that of eating only a poached egg on Sunday[*]. The celebrated John Hales, known by the name of 'The ever memorable,' was a great faster, it being his constant custom to fast once a week, from his dinner on Thursday, till Saturday at breakfast; that is, Thursday evening, and all Friday[†]. And Cheyne

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[*] A person of great experience has recommended, if at any time you transgress on one day, to repair the injury by greater abstinence on the next. Occasional fasting, without considering it as a religious duty, is the best antidote against too frequent feasting. See the Invalid, by A. Nonagenarian, p. 28.

[†] He died 19th May, 1656, at the age of 72. See Wood's Collect. There are some instances of fasting, and of great abstinence, in Adair's Natural History of the Human Body and Mind, p 167.

recommends once a week, or a fortnight, or a month at farthest, either to live low, or *maigre*, as the French call it, or to take some domestic purge. Without, however, adopting any regular plan of fasting, it has been often found of service, when the stomach is disordered, or feels uneasy from repletion, to refrain from the next meal or two, rather than to take physic. Abstinence from food for a short period, restores the force of the organs, by diminishing their exertions, and giving them rest.

But it must not be imagined, that abstinence is attended with no risk or danger, to those who have been accustomed to regular supplies of food, and who are not compelled by disease to adopt that regimen. Fasting, even for twenty-four hours, is often followed by a disgust and aversion to food, and a tendency to putrescency, owing to the want of fresh blood. By abstinence, we leave the coats of the stomach a prey to an acrimonious humour, the voracity of which, nature intended to be employed on our food. Nay, it appears from the aphorisms of Hippocrates, and those of Sanctorius, that it is safer to exceed a little in quantity, than to fall short, for the damage of a more full diet is soon remedied, either by exercise, or gentle evacuation; but the decay of strength, the natural consequence of too spare a diet, is not so easily repaired. In general, indeed, instances of abstinence, as they are but few, so are they of such as led inactive and solitary lives. In that case, the waste of spirits being but little, their supply need but be answerable to it *.

2. A temperate diet, however, has always been attended with the best effects. A regular attention to this practice, is the only infallible nostrum for the prevention of disease. It is sometimes essential for those, who are under the necessity of having their minds always on the watch, to be extremely temperate; hence the gallant defender of Gibraltar, (Elliot, Lord Heathfield), lived for eight days during the siege, taking only four ounces of rice per day, as solid food †. The celebrated Dr. Franklin, when a journeyman printer, lived for a fortnight on bread and water, at the rate of ten pounds of bread per week, and he found himself stout and hearty with this diet ‡. A respectable magistrate, (the late Alderman Watson), informed me,

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* Wainwright on the Non-naturals, p. 184.

† Adair's Medical Cautions, 2d edit. p. 142.

‡ The Works of William Stark, M. D. p. 92.

that at the age of seventy, he was free from every bodily complaint, and had never paid five shillings a-year to the faculty in the course of his life, which he attributed to his having restricted himself to fourteen ounces a day of solid food. And the number of indigent people, who have lived to a great age, is a proof of the justness of Lord Bacon's observation, that intemperance of some kind or other, destroys the bulk of mankind; and that life may be sustained by a very scanty portion of nourishment [*].

Hay, in his Essay on Deformity, contends, that health is more in a person's own power than is commonly imagined, and is rather the reward of temperance than the effect of constitution [†].

It is proper to remark, however, that the consequences of a too slender diet, are more fatal than one that is more plentiful. How many young women, with a view of reducing their corpulency, stint their appetites and ruin their health for ever. It is easy to remove, by medicine, the troublesome fulness which is caused by over-eating; but to restore health, destroyed by long abstinence, is extremely difficult [‡].

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[*] On this subject, a person of great eminence in the medical military department, has sent me the following remarks.—"I have wandered a good deal about the world, and never followed any prescribed rule in any thing; my health has been tried in all ways; and, by the aids of temperance and hard work, I have worn out two armies, in two wars, and probably could wear out another before my period of old age arrives; I eat no animal food, drink no wine or malt liquor, or spirits of any kind; I wear no flannel; and neither regard wind nor rain, heat nor cold, where business is in the way."

[†] If every virtue, in its consequences, he adds, is its own reward, temperance is eminently so, and every one immediately feels its good effects. The maxims of temperance, however paradoxical they may appear, are not the less just: among these, it may be stated, that the smallest liquors are the best; that there never was a good bowl of punch, nor a good bottle of champaign, burgundy, or claret; that the best dinner is one dish: that our entertainment grows worse in proportion as the number of dishes increase; that a fast is better than a lord mayor's feast; that no connoisseur ever understood good eating; that no minister of state or ambassador ever gave a good entertainment; no king ever sat down to a good table; and that the peasant fares better than the prince, &c. Being inspired with such sentiments, what wonder is it, if sometimes I break out into such ejaculations—O temperance! thou goddess most worthy to be adored! thou patroness of health! thou protector of beauty! thou prolonger of life! thou insurer of pleasure! thou promoter of business! thou guardian of the person! thou preserver of the understanding! thou promoter of every intellectual improvement, and of every mortal virtue!

[‡] Valangin on Diet, p. 85. An intelligent physician has also remarked, how cautious medical persons ought to be in prescribing a strict regimen in respect to diet, more especially if such regimen is intended to be continued long. Few persons, even of the best health, can, without disgust, bear to be confined to a peculiar food, or way of living, for any length of time. Things

3. Many are the causes of ill health, but the principal one is the variety and excess of food.

No man, says Galen, would ever be seized with a disease, who takes sufficient care to avoid crudities or indigestion; that is, who eats no more than he can digest: and Cheyne remarks, in his English malady, that what is eaten and drunk, and taken into the habit, is the original cause of almost all the diseases which afflict mankind, external accidents, pestilential and contagious diseases, or what the body suffers from the passions of the mind, alone excepted.

The inventions of gluttony also, are often detestable. What can be more pernicious than the mode of preparing what is called *a devil*, for the purpose of creating artificial thirst? The gizzard of a turkey may be taken for an example. First, the flesh is *bedevilled*, as it called, with pepper and salt, then a little nutmeg, a little cinnamon, a blade of mace, with shallot, onions, &c. are added, and it is then eaten with oil, vinegar, and mustard. Such an heterogeneous mixture must become a caustic fluid, tearing or destroying the finer vessels, and generating fevers, calentures, and every disease incident to the human body*.

Impressed with a full conviction of the dangers resulting from excess, the author of this work, early laid it down as the best rule he could adopt, for the preservation of health, to pay a proper attention to TEMPER, TEMPERANCE, and SLEEP. By good temper, the mind is preserved from disease, and by temperance, the body; and, when both the mind and the body are exhausted, they are again recruited, and restored to their former strength, by a sufficient quantity of repose.

SECT. VIII. *Rules of a Miscellaneous Nature.*

IN addition to the preceding observations, it may be proper to make a few cursory remarks, regarding the rules which ought to be adopted with respect to solid food, as connected with the climate and the seasons, and adapted to infancy, childhood, youth, manhood, sickness, and old age.

1. *Climate.*—It is a common observation, that nature itself points out the sort of food best calculated for the

disagreeable to the palate, seldom digest well, or contribute towards the nourishment of the body; and the body must be weakened, when too small a quantity of food is taken in.—*Falconer's Observations on Diet and Regimen*, p. 8.

* See the Invalid, by A. Nonagenarian, p. 55.

inhabitants of different countries, by the articles which are either indigenously produced, or are raised with the greatest facility; hence in warm countries, vegetable food ought to be preferred, and in cold countries animal. It is a good general rule, therefore, to live upon the productions of the country where one resides, and to consume them in the manner usually adopted by its inhabitants[*].

2. *The Seasons.*—It cannot be questioned, that different proportions of food ought to be consumed at the different seasons of the year, which the feelings of every individual will naturally indicate[†]. In winter, the greatest quantity of solid food is necessary, and can be safely taken; but the quantity should be gradually diminished during the other seasons. The following is the proportion adopted by Dr. Robinson, during one year of his experiments.

Season.	Meat.	Drink.	Total.
Winter, ...	19.51	42.35	61.86
Spring, ...	19.77	41.03	60.80
Summer, ...	21.33	34.98	56.31
Autumn, ...	20.73	34.59	55.32
Medium, ...	20.33	38.24	58.57

It is a proper system, in winter, to use more meat and less drink; in summer, less meat and more liquids; in summer, boiled meats should be oftener used; in winter, roasted; in summer, cold meats; in winter, hot.

3. *Infancy*[‡].—Any detailed observations on the diet of infants, seem to be here unnecessary; and the subject in general, is sufficiently understood, for nature points out, and custom sanctions, that milk of some sort or other, is the most suitable aliment for that stage of life. Any species of bread given to infants, ought to be unfermented;[*]per-

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[*] See Tryon's Way to Health, p. 116.

[†] Robinson's Dissert. Table 2.

[‡] It may be proper to state, that women's milk at first contains a large quantity of sugar, and a less proportion of coagulable or cheesy matter, a mixture peculiarly well adapted for a very young child; but some months after, the coagulable matter increases, and the sugar proportionably diminishes. Hence it is, why a young child of a month old, will not, in general, thrive on breast milk, eight or nine months old.—See an Easy Way to prolong Life, p. 13.

haps biscuit powder is the best. There is no food on which children thrive better than on oat-meal porridge.

4. *Childhood.*—Even after an infant is weaned, animal food should be avoided, or at least given very sparingly, vegetable food and milk being the best diet for the first five or six years. The consequences of a different system are often extremely fatal; and the greater frequency of convulsions, in England, than in Scotland, is attributed to the more luxurious manner in which children are brought up in England, getting, at an early age, great quantities of butter, meat, fermented liquors, &c. and often without a sufficient quantity of pure air or exercise. This oppresses their tender organs, brings on a too early maturity, which stints their growth, and must occasion those nervous and other disorders with which they are afflicted to a much greater degree than the Scots, who are brought up with less delicacy, and in a more hardy manner.

5. *Youth.*—The diet of young people should chiefly consist of diluents, in order to facilitate the progress of their growth. Hence broths, mixed with a large proportion of vegetables, are most suitable for them. Milk also, is a proper part of diet, and it should be used in every form, during this stage of life. In point of drink, water is the best, and should be almost the sole beverage. Condiment of all kinds, with the exception of a moderate quantity of salt, should be avoided; and nothing should be taken that can, by stimulating the system, induce a too early maturity, before the constitution is ripened for it by years. It is at this period of life, that the habits of the man are, in some measure, formed; and, as much depends upon habit, it is of general importance, to accustom persons in their youth, in some degree, to that mode of living which is most likely to be of use to them when they get old. This observation is particularly applicable to the lower orders, who are more the children of custom, than even the upper classes.

6. *Manhood.*—When the body has reached its full growth, the quantity of food may be rather abridged, being only necessary to preserve, and not to increase the bulk of the body. From the greater exertions, however, both personal and mental, which are usual in a state of manhood, *the aliment should be of a more nourishing nature*, and a proper proportion of animal food should be consumed. Moderation, at the same time, is necessary, at this period of life, as well as at every other, though greater latitude is commonly given during manhood, than at any other time.

7. *Sickness.*—The rules of diet in sickness, are a subject of great extent, and properly belong to the medical department. It is advisable, in such cases, to have the aid of an intelligent physician, to whom the diet of his patient must necessarily be an object of particular attention; and whose prescriptions must vary according to the nature of the disease, the constitution of the patient, and the circumstances of each particular case*.

8. *Old Age.*—The diet of old age should, in some degree, return to that of the early periods of life. Broths and liquid food should be principally made use of, and all the nourishment taken should be of the most digestible kind. A moderate proportion of the safest condiments may be used at this period of life, for the appetite becomes more languid, and the springs of the machine less able to perform the operations that are required. In regard to drink, the use of fermented liquors, more especially wine, is peculiarly allowable at this period of life; for the vital powers require, in some degree, to be supported, and the languid action of the system to be kept up.

As any error in the diet of age, however, is more dangerous than at any other period of life, it may not be improper to be more particular, regarding this branch of the subject.

It is certainly more healthful for old people to eat three or four times a day, than to make one hearty meal, which obstructs perspiration. No aged person, however, should eat more than one considerable meal of solid food in the day. The stomach will digest a dinner, when breakfast and supper have been light; otherwise the load of one meal not being gone off, before another is brought on, neither will be properly digested.

Old people ought to live on light and moist food, which will make a thin blood, capable of penetrating the smaller vessels of the body, which, in age, grow strait, and are frequently almost stopped up.

Beef and pork ought to be avoided; but mutton, poultry, rabbits, and fish, are well calculated for old age, and these certainly produce a sufficient variety.

The breakfast ought to be moderate, and the dinner not early, to prevent too great an appetite for supper. A light supper is of use, to prevent too great an appetite for breakfast. The stomachs of old people should never be overloaded. The meals, however, should be so arranged, that the appetite should not be fasted away, as the power of digestion goes with it.

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* Arbuthnot, in his Treatise on Aliments, chap. iii. and iv. has given a variety of practical rules of diet, applicable to the different diseases, but in a style hardly intelligible to any but medical men, which, perhaps, indeed, was the author's intention.

During meals, weak malt liquor is better suited for old people than wine, but a few glasses of wine may be taken after dinner*.

Roots ought, in general, to be avoided, potatoes excepted. Turnips are innocent, but watery; parsnips are nourishing, but not generally acceptable; and carrots are very unfit for weak stomachs; cabbage of all kinds are flatulent; asparagus and artichokes, however, are excellent for old people, more especially if liable to gravelly complaints.

Salad should be shunned, though some recommend the cabbage lettuce, as having a tendency to promote sleep.

Particular care ought to be taken to eat no butter or cheese, but of the best quality, and in moderation; fine Cheshire or Parmesan, are the best kinds of cheese.

Fruits, when thoroughly ripe, are innocent, the pine apple excepted, which is extremely dangerous to old people. Cucumbers also ought to be avoided.

All mixtures of food, or variety of dishes, ought to be shunned by persons advanced in years, who ought also to be upon their guard, against those articles to which they have not been accustomed†.

Conclusion.—*General Rules.*

We shall conclude with some general rules, necessary to be attended to, regarding the consumption of solid food.

1. We should not eat immediately after exercise, nor when we are hot, but forbear till the spirits are settled‡, and the body is cool. Neither should we, if possible, come to meat burdened with care or business; for, owing

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* The art of preserving long health and life must consist, in using no greater stimulus, whether of the quantity or kind of our food and drink, or of external circumstances, such as heat and exercise, and wakefulness, than is sufficient to preserve us in vigour; and gradually, as we grow old, to increase the stimulus of our aliment, as the inirritability of our system increases.—*Darwin's Zoonomia*, vol. i. p. 468.

† See the subject more fully discussed, in the Old Man's Guide to Health and Long Life, by J. Hill, M. D.; also the Nurse's Guide, to which is added an Essay on Preserving Health, and Prolonging Life, by an eminent Physician, cap. iii. p. 87.

‡ Mainwaring on the Preservation of Health, p. 64.

to the sympathy between the brain and the stomach, a disturbed mind will impede the functions of the stomach. It is for this reason, that we ought not to eat alone, in a churlish melancholy manner, but cheerfully with our friends. Mirth and good company help a dull stomach, create an appetite, and forward digestion. Lively music, also, is a pleasing, and useful addition to a feast.

2. It is a proper rule, never to eat a second time, till the stomach has completely emptied itself of its former contents, and it should be at such a distance from bed-time, that digestion should be nearly finished before we sleep; for the preparation of our food by the stomach, and the application of it to nourish the body, are actions of a different nature, and the latter is generally done during sleep. The most seasonable times for eating are, in general, about an hour or two after rising, and two or three hours before going to bed*. The proper interval between one meal and another, in the day time, must depend on the strength of the stomach, and the quantity and quality of the food taken, varying from four to six hours.

3. Exercise should not follow immediately after a meal. Nothing should interfere with the action of the stomach whilst engaged in the process of digestion. This rule is particularly applicable to the delicate and the nervous. The brute creation pay particular attention to this rule, by lying down, and enjoying a state of rest, the moment their stomachs are filled.

4. We should take care also to masticate our meat well; nature having provided teeth expressly for that purpose. The saliva with which we thus mix it, furnishes some help to digestion. Besides, in breaking it down with the teeth, less labour is imposed on the stomach, and the gastric juice can more speedily and more effectually subdue it. To eat greedily, therefore, and swallow our meat hastily, is not only indecent, but highly injurious to the health. Food thrown too hastily into the stomach, distends its coats too suddenly, and consequently weakens them. By a hasty and imperfect mastication, the food does not receive that prepa-

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* Burton on the Non-naturals, p. 230. Wainwright's Mechanical Account of the Non-naturals, p. 208, recommends three hours after rising, and four or five before going to bed, founding this doctrine on several aphorisms of Sanctorius, particularly Sect. I. No. 57, Sect. IV. No. 29, 28, and 35. But this would be certainly going too far.

ration which it ought to have, previous to its reception into the stomach[*].

5. It is proper to restrict ourselves to those kinds of food, which experience points out as the best calculated for our constitution and stomach. We should never eat any thing that lies heavy on the stomach, or that rises in it, or is long in passing off, or that is flatulent or windy, or occasions belching, heartburn, gripes, or fluxes. These are sure symptoms of improper digestion, the forerunner and the source of numerous disorders.

6. The question, how far a variety of foods is admissible, has been much disputed. It is proper to observe, that foods must, in some respects, be various. Thus, there must be a mixture of liquid and solid foods; there ought also to be a mixture of animal and vegetable foods. In regard to the question, *whether a variety of the same kind*, be necessary or proper, for instance, in regard to animal foods, beef, fish, fowl, &c. at the same time, the celebrated Cullen has observed, that, in general, he never perceived any inconvenience from this mixture, or difficulty in assimilation, provided a moderate quantity be taken[†]. There are, however, some exceptions to this; as taking a large proportion of sour or acescent substances with milk; or a mixture of fish with milk, by which the milk is coagulated too firmly to be easily digested. The principal objection to a variety is, that it provokes gluttony. Physicians have, therefore, almost universally, preferred simplicity of diet, as satiety is sooner produced by one, than by many substances[‡].

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[*] See the Method of Preserving Uninterrupted Health to extreme Old Age, p. 2. Also the Almanac des Gourmands, 2de année, p. 286. Smith's Letter to Cadogan, p. 53; and Adair's Medical Cautions, p. 214.

[†] Materia Medica, p. 105.

[‡] A variety of dishes, it is said, is a suitable entertainment for grandeur and gluttony; but though a good stomach may digest fish, flesh, fowl, wine, and beer, at one repast, yet nothing can be more prejudicial to the health, than our indulging ourselves in a discordant variety of aliments at the same meal; and if we add, (which is too frequently done), fruits, cream, and salads, to the articles mentioned, the bowels will be distended by the flatulent mixture, and the digestion perverted. It is also proper to observe, that different sorts of animal food require different periods to digest them; for instance, white fish from four to five hours; poultry, six hours; whereas beef, mutton, veal, and other butcher meat, require, it is supposed, about seven hours, to be retained in the stomach before digestion is completed. Now, it is not likely that the stomach can select one article to be digested in preference to another, but must carry on the digestive process of the whole indiscriminately. If the stomach discharges what is digested into the bowels, before the digestion of the whole is completed, then feverishness

7. It is curious to observe the different rules that are given, regarding the quantity of food to be taken at meals. One author very gravely recommends, never to fill the stomach, so as to render it necessary to *unbutton* or *unlace**, which is surely giving ample latitude to both sexes. Some contend that we ought to eat as much as we can; but this rule cannot be recommended. The stretching any power to its utmost extent, weakens it. If the stomach is every day obliged to do as much as it can, it will every day be able to do less. A wise traveller will never force his horse, to perform as much as he can, in one day, upon a long journey†.

Others contend, that we should leave the table without having a sense of fulness in the stomach, and even with an appetite. But the fact is, that the food, which is not felt in the stomach, or, in other words, which does not occasion some fulness, (not arising at the same time from its weight, or from flatulence), is tardily concocted. The stomach, indeed, goes through the process of digestion best when it is sufficiently full.

On the whole, the following rules seem to be the most rational, regarding this important particular: 1. We ought always to desist from eating before the sense of fulness becomes oppressive. If the stomach be too full, digestion is not only stopped, but a kind of palsy of the stomach is produced‡. 2. The most healthful quantity of food is such as, after eating, will not hinder the body from performing the same labour or exercise, and with the same activity as it did before it was eaten. The body should feel rather ballasted than overloaded, and the mind as fit for labour or study soon after, as previous to the meal. 3. If, after a meal, a person can, not only write, walk, or do his necessary business, with ease and pleasure; but if, after supper, he sleeps his usual time undisturbed, if he finds his rest not shortened by what he has eaten or drank, and rises next

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may be produced; and should the digested parts be retained until the stronger meats are assimilated, then acidity, flatulence, and other unpleasant symptoms will be the result. It is highly expedient, therefore, particularly for weak stomachs, to eat but one sort of meat, which will be all digested and expelled at nearly the same period of time.

* The Family Companion of Health, p. 25.

† Father Feyjoo's Rules for Preserving Health, p. 85. Nothing can be more absurd than the custom of pressing persons to eat and drink, under the pretext of kindness and civility; it is like forcing a tired horse to take a longer journey.

‡ Adair's Medical Cautions, p. 255.

morning without a headach, or a bad taste in his mouth, and at his common rising hour, it is an undubitable proof, that he lived the foregoing day, comformably to the rules of temperance.

8. Custom is another point to be considered in the choice of food. What we have been longest used to, generally agrees best with us *. Change of diet is apt to cause some alteration †; when a new diet therefore, offers itself, as upon change of residence, we should at first be sparing; upon further use we may be bolder. Nay, even with those to whom a change of diet becomes necessary, it should be brought about by degrees.

9. There are a number of miscellaneous rules, regarding solid food, which cannot be comprehended under any particular head, among which the following merit particular attention: 1. The nourishment, we take, unless in youth, when growing, should be merely sufficient to supply the waste of the system. The amount, however, must depend upon circumstances. Lean men, for instance, wear faster than fat men, their blood being generally more acrid, and agitated with a greater degree of velocity; they require, therefore, larger supplies ‡. 2. As most diseases derive their original from repletion, to eat moderately, is the best way to escape them. 3. The more we feed foul bodies, the more injury we do them. 4. If we eat too much at one meal, we should abstain from the next, to get the body again into order. 5. On the other hand, if by any accident, as in travelling, a person has lost his dinner, he ought not to eat a voracious supper to make up for it, otherwise he will spend a restless night, and not a comfortable

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* We are governed by habit, in regard to the foods we wish to take; for instance, beer taken to breakfast will disturb the digestion of those who have been accustomed to tea; and tea taken to dinner, will disagree with those who have been accustomed to beer.—*Darwin's Zoonomia*, vol. i. p. 454.

† The following judicious observations merit attention. There are some who, after living freely, and indulging themselves in wines and high eating, feeling bad effects from such a course, and seeing in others the bad effects of intemperance, commence a different course of living, observe precise rules, live mostly upon a vegetable diet, and use only water for their drink: nature does not, in general, admit of such sudden changes. From the spare diet they have adopted, the powers of digestion become enfeebled, a collection of crudities, or an accumulation of phlegm in the stomach and intestines necessarily takes place. They become meagre, sallow, and relaxed, and the only chance they have of a restoration of health, is to return to a more generous diet, to make use of a proper admixture of animal and vegetable food, and to drink more vivifying liquors. See some Thoughts on the Relaxation of Human Bodies, p. 18.

‡ Barry on Digestion, p. 144.

one, as would probably have been the case, had he taken a slighter supper, or both dined and supped moderately. 6. It is a vulgar error to imagine, that the more a man eats, the stronger he is; for, whoever eats more than nature requires, receives less nourishment, and thereby impairs his strength. 7. People, in general, especially those who do not labour, eat much more than nature requires. A little abstinence or self-denial, may often be of use, either to prevent or cure disease. None but hard-working people, or those who are in the very prime of life, or growing fast, should eat more than one substantial meal each day. 8. Foods generating much air, or what are called *flatulent*, should be avoided by weak stomachs. 9. Adults are better nourished on meat having a tendency to putridity, (alkalescent), but the young and growing, on gelatinous foods. 10. It is a good rule, when you recover, after a severe illness, your pristine state of health, gradually to return to that regimen by which you formerly enjoyed it. 11. Hippocrates justly observes*, that we ought to prefer that food and drink which is most agreeable, though of a less wholesome quality, to what would seem better for us, but is more unpalatable. 12. It is unwholesome to eat custards, tarts, pies, almonds, nuts, cream, and a variety of other articles, after a great load of animal food, for the stomach having already received fully as much as it can well digest, the additional quantity overloads it, creates fever, and becomes prejudicial to the constitution.

10. Some general observations, regarding the diet of the rich, and of the poor, may not be unacceptable at the conclusion of this chapter, though, for more minute details, the preceding pages of this, and the former chapter, must be referred to†.

In regard to solid food, the rich ought to live upon what is either by nature easily digestible, as game, poultry, and the lightest sorts of fish, or upon meat long kept, and thus rendered digestible by time. They should never take any salted meat, or salted fish, except cured in the slightest manner. Their diet ought to consist of articles that afford moderate, but wholesome nourishment, that fill the stomach without overloading it, and, above all, that are easily digested. With animal food, therefore, a considerable quantity of bread, potatoes, and other vegetables, ought to be taken. The following proportions of the different sorts of solid food, may, in general, be most advisable, namely, one third of animal food: one third potatoes and other vegetables; and one third bread.

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* Aphor. Sect. ii. Aphor. 38.

† The diet of a ploughman would oppress the digestive and vital organs of a sedentary person; and a spare diet, chiefly of vegetables, would not support a labouring man.—*Adair's Medical Cautions*, p. 295.

The laborious poor, on the other hand, ought to live on articles wholesome, but coarse, and not easily digested. When the stomach is empty, they cannot work, hence the finest bread is the best for them (being the most indigestible), though not for their wives and children. Cheese, salted meat, and salted fish, cabbage, &c. are good for them. To them, waxy, are preferable to mealy, potatoes; but dried potatoes better than either. The pulse tribe, as beans and pease, when arrived at maturity, are excellent. Nuts, in moderation; but other fruits ought to be avoided, being too digestible for their strong stomachs. Where fine bread cannot be had, either biscuit, or boiled grains, as pot-barley, or rice, ought to be procured for them. Roasted or baked meat, is better for them than boiled, and fat meat than lean. There could not be food more adapted for them than fat meat, baked or roasted, with potatoes done under it, if it did not excite so much thirst. It is particularly to be observed, that when the industrious labourers eat animal food, it should be either dried or salted, *or in as fresh a state as possible*, so as to be the more indigestible[*].

Whether the food of the poor ought to be liquid or solid, is a point that has been much controverted. Broths and soups, being rather drank than eaten, defraud the stomach of that salivary juice, which a competent mastication carries down with it, and which is of some use in digestion; and solid meats also, give more exercise to the stomach, by which, in moderation, it is strengthened. At the same time, the constant use of dry bread, and animal substances, which is often carried to such an extreme, excites an unnatural thirst, and leads to the immoderate use of beer, and other stimulating liquors, which generate disease, and the purchasing of which reduces the lower orders of the people to a state of indigence[†]. Perhaps the best plan for the nourishment of the laborious classes, hitherto introduced into practice, is that adopted by the keelmen of Newcastl who buy fat meat, which they make into broth; the liqui part is given to their wives and children; the solid pa they consume themselves, with bread, in slices, taking i with them in a cold state. Such meat is not so nourishing as when roasted or baked; but that is made up for, by a addition to the quantity. In this way, also, less fermented liquor is necessary, than when other modes of using animal food are adopted.

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[*] These observations are principally applicable to the poor in England. In Scotland, the greater proportion of the laborious classes of the community, hardly ever taste animal food, but live on porridge, bread, beer, and water-kail, as it is called.

[†] Buchan's Domestic Medicine, p. 613.

CHAP. IV.

ON DIGESTION, AND THE EFFECTS THEREOF.

WHEN we consider the immense quantity of liquid and of solid food, consumed by one human being in the space of a single year, and still more the aggregate, during the course of a long life, it is natural to inquire, what purposes can such a variety of articles answer, and how the stomach disposes of them? In the course of a life of common duration, the produce of several acres of land, the weight of a number of large oxen, and the contents of many tons of liquor, are consumed by one individual; whilst, in regard to size and bulk, he continues nearly the same, whether he drinks the pure stream, or the beverage the most skilfully compounded; whether he feeds on a variety of articles produced from the animal and vegetable kingdom, or confines himself to one particular substance; and, whether his food is prepared in the plainest and simplest manner, or by the most refined and artificial modes that luxury has hitherto invented. All these circumstances depend upon the process called *digestion*; the nature and effects of which, we shall now endeavour briefly to explain.

In considering this subject, we shall inquire, 1. How the food, when thrown into the stomach, is prepared for the nourishment of the body. 2. In what manner the blood is formed from the food thus prepared. 3. What is the nature of assimilation or nourishment, in so far as that intricate subject has hitherto been explained. 4. In what manner that part of the food is disposed of, that is not required for the nourishment of the body. And, lastly, What are the best means of promoting digestion, when there is any deficiency or error in regard to that important function.

SECT. I. *Of the Operations of the Stomach, in preparing Nourishment for the Body.*

THE stomach is a capacious bag, into which the aliment is received, for the purpose of being converted into a state which will render it capable of affording nourishment to the body. It is both muscular, and capable of contracting its dimensions; it is also very sensible, and easily affected by any thing that acts upon its nerves. Without a stomach no animal can live; and various animals owe to it, every muscular motion. Nay, life itself is preserved in the stomach, independently of almost every other organ. In man, the stomach is found to be the centre of every impression; and it is the receptacle of food, of poison, and of medicine, the effects of which, on that important organ, are propagated to every other part. Though subject to disorder, it is accessible to remedy; and, *like the father of a family*, in the emphatic words of Lord Bacon, it keeps all the other parts of the system in proper balance, and in due order. Hence it is, that on the state of the stomach depends so much the general healthiness of the frame*.

After these general observations, we shall now proceed to consider the process of digestion †.

The principal agents in digestion, (respecting which, however, there is great difference of opinion), seem to be, 1. The saliva, or spittle; 2. The gastric juice; 3. Its contractile force; and, 4. Heat‡.

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* With his usual felicity of thought and of expression, has Shakespear described the importance of the stomach—

> It is the store-house, and the shop
> Of the whole body. True it is,
> That it receives the general food at first;
> But all the cranks and offices of man,
> The strongest nerves, and small inferior veins,
> From it receive that natural competence
> Whereby they live. *Coriolanus*, Act I. Scene 1.

On the state of the stomach, indeed, depends that of every organ and function of the system Van Helmont calls the inferior aperture of the stomach, (the pylorus), the careful sentinel, which denies a passage to any thing injurious to health; and other authors have called it, the animal, the conscience of the body, and the seat of the soul.

† A short treatise on digestion, by George Fordyce, M. D. printed in 1 vol. 8vo. an. 1791, is one of the most valuable works that has been published on the subject.

‡ Some also imagine, that the air which finds its way into the stomach,

1. *Saliva.*—Before any solid food is received into the stomach, it ought to be previously masticated. On this head, as Hippocrates has well observed, *such as live to a great age have many teeth*, their food being generally well prepared: whereas those who have bad teeth, are, from an *imperfect mastication*, more subject to such disorders as arise from imperfect digestion [*]. Indeed the food should not only be thoroughly masticated, but should be mixed with the saliva, which answers various useful purposes in the animal economy. 1. It moderates thirst, by moistening the cavity of the mouth. 2. It enables the palate to distinguish the taste and qualities of the food taken. 3. During mastication, it mixes with the food, converts it into a soft and pulpy mass, and renders it fit to be swallowed. And, 4. It is probably also of some use, in promoting the dissolution of the food in the stomach[†].

2. *The Gastric Juice.*—It is now ascertained, by the most decisive experiments, that the dissolution of food in the stomach, is principally affected by the action of a particular liquid secreted by the stomach, and for that reason called the *gastric* juice. Food subjected to its operations, is not merely reduced to very minute parts, but its taste and smell are entirely changed; its natural properties are destroyed; new and very opposite ones are acquired; and it becomes a substance of quite a different nature[‡].

The powers of the gastric juice for coagulating milk, have long been known: for the infusion of the stomach of a calf has been employed, in all ages, for curdling milk; but the great use of this article, as a general solvent of the alimentary substances in the stomach, is a modern discovery.

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must have some effects favourable to digestion, (see Barry on Digestion, p. 9); and as the atmosphere has such astonishing effects in the dissolution of bodies, the air may have similar effects on the stomach. Dr. Falconer also observes, that the presence of air in the intestines, is, to a certain extent, necessary and useful, and must serve important purposes in the animal economy. It is not improbable indeed, that one of the great advantages arising from a vegetable diet, is from the quantity of air produced in the course of its being dissolved in the stomach.

[*] See Barry on Digestion, p. 7.

[†] See Hooper's Lexicon, *voce* SALIVA; and Thomson's System of Chemistry, vol. iv. p. 611. It is of infinite importance to preserve the saliva in a healthy state, on account of the gums and the teeth. As that saliva has a great affinity to *oxygen*, or pure air, which it readily absorbs, and gives out again to other bodies, it is found to be an useful application to sores of the skin. Hence dogs, and other animals, have constantly recourse to this remedy, and with much advantage.

[‡] Thomson's System of Chemistry, vol. iv. p. 699.

The amount of gastric juice, is sometimes considerable. It has been discharged from the stomach by vomiting, in large quantities; but its amount cannot be ascertained, being necessarily mixed with other liquids. It is likely to be most copious, when solicited by the stimulus of food.

It is supposed that it is the gastric juice, operating upon, and irritating the coats of the stomach, which occasions the sensation of hunger; and it may injure that organ, if that powerful fluid were to act on the stomach itself, instead of some alimentary substance which it was formed for dissolving.

3. *Contractile powers of the Stomach.*—It was formerly imagined, that the food was prepared to furnish nourishment by the mechanical action of the stomach; but though that doctrine is now exploded, yet its muscular powers must have some effect in digestion[*]. By its contractility it constantly adapts itself with accuracy to its contents, sometimes holding two quarts, and sometimes upwards of ten pints, and sometimes, in a diseased state, being filled with less than an ounce[†]. Hence the stomach enjoys a *retentive faculty*, which is highly necessary to nutrition. For the transmutation of the aliment into chyme, not being performed in a moment, but the work of some hours, unless the food were retained in the stomach a competent time, till that work be finished, both the digestion, and the distribution afterwards, (without which there could be no nutrition), would be imperfect[‡].

4. *Heat.*—The heat of the stomach, in a healthy man, is greater than the common heat of the sun in a summer's day; and this appears, from many experiments, to be more proper for the digestion and dissolution of bodies, than a much greater warmth[§]. It is owing to the heat which the stomach requires, that too thin clothing seems to have a tendency to weaken that organ. In sedentary people, in particular, the belly is apt to feel cold from insufficient covering; and, in this respect, the ancient materials and fashions of dress have an advantage over the modern, particularly in men. It is impossible that the region of the sto-

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[*] See Barry on Digestion, p. 12, 13 & 14. Also Beddoes's Hygëia, vol. ii. Essay viii. p. 8; and the celebrated Cuvier's Leçons d'Anatomie, &c. tom. iii. p. 7, who states, that the movement and pressure of the intestinal canal promotes digestion.

[†] Adair's Natural History of the Human Body and Mind, p. 160.

[‡] Charleton's Inquiries into Human Nature, p. 103.

[§] Barry on Digestion, p. 8.

mach should be habitually chilled, without injury to digestion[*].

By these means, the food is formed into a soft pulpy mass, called *chyme*, which passes from the stomach into the intestines, where it is subjected to new changes.

SECT. II. *On the Formation of the Blood.*

THE succession of steps in the process of digestion, has been elegantly compared, by an ingenious author, to a very complicated manufactory, where the material, before it can attain the necessary perfection, passes through the hands of a multitude of artisans, each of whom, in his department, must do justice to the fabric, or else the whole labour will, in a great measure, be lost[†]. This observation is peculiarly applicable to the formation of that important article, *the blood*.

When the food is digested by the stomach into chyme, it is gradually pressed, (and there the contractile power of the stomach is of particular use), out of the stomach into the intestines, which generally happens in a period of from six to eight hours; and it is there converted into two substances; 1. Chyle; and, 2. Excrementitious matter.

The chyle is a bland juice, of a whitish colour, and very much resembling milk. It is supposed, that it may be separated from the excrementitious matter of the chyme, by means of two substances; 1. Bile; and, 2. The pancreatic juice, with both which the chyme is mixed in the intestines.

1. The bile is the most sapid humour in the whole body; and is a natural digestive, which possesses greater real virtues, than what the chemists have formerly assigned to imaginary ferments and precipitants.

There are two kinds of bile in the human body; the one, which flows immediately from the liver, called the *hepatic* bile, is thin, and only slightly bitter; the other, which comes from the gall-bladder, and is called the *cystic bile*, (which is the bitterest humour in the body), is thicker, and more acrid. They are mixed together in the intestines; and both are of use in the formation of chyle, though they are not absolutely essential for that purpose[*].

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[*] Beddoes's Hygëia, vol. ii. p. 56. In France, they are accustomed to wear a large *manchon* or muff, for the purpose not only of keeping their hands, but their stomach warm. But the cold in England is not so intense as on the Continent; hence such a practice is not so necessary in this country. Many, however, have found benefit from wearing a piece of flannel over their stomach. Though heat is so useful to the stomach, yet *warm rooms* are extremely pernicious to that organ, impairing the digestive powers, and bringing on habitual debility.—*Hygëia*, vol. ii p. 73.

[†] Beddoes's Hygëia, Essay viii. vol. ii. p. 20.

2. The pancreatic gland separates a large proportion of fluid, which is mixed with the bile, and tempers its acridity. It renders it more miscible with the chyle, and enables it better to separate from the feculent matter[†]. It is also of use as a diluent; for the chyme or aliment, as digested by the stomach, is of a viscid nature.

By these means the chyle, and the excrementitious matter, are separated in the smaller intestines. The first is then absorbed by a number of minute vessels called the lacteals, whilst the excrementitious matter is pushed along the intestinal canal, and at last thrown out of the body altogether.

After the chyle has been absorbed by the lacteals, it is carried by them into a pretty large vessel, known by the name of the *thoracic duct*, where it is mixed with another fluid called *lymph*, the nature of which is very little known, and thence is conveyed directly into the blood-vessels and lungs, where it undergoes other changes.

Numerous as these processes are, yet they are all essential for the purposes of digestion; and notwithstanding their complicacy and number, yet it appears, from various experiments, that wholesome solid food, eaten by a person in health, will, in the space of from six to eight hours, be entirely discharged from the stomach, changed into wholesome chyle, and will begin to flow into the blood[‡].

On the subject of chyle, it is proper to make two additional observations: 1. That all the materials capable of serving for food must have one common property. Each must contain the principles of chyle; for, unless that liquid can be formed from those materials, by the stomach and its appendages, they can be of no use as nourishment[§].

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[*] It is proper to observe, that where the secretion of bile is defective, it does not appear that the nutrition of the body is thereby materially injured. See Abernethy's Surgical Observations, note, p. 27; Beddoes's Hygëia, vol. ii. Essay viii. p. 21.

[†] Adair's Natural History of the Human Body and Mind, p. 176. Mackenzie's History of Health, p. 305. Burton on the Non-naturals, p. 303.

[‡] Parry on Digestion, p. 51. Let any chemist endeavour to convert a turnip into blood, which the stomach and the other organs of the human body will do, and the necessity of a variety of complicated processes will appear the less to be wondered at.

[§] Beddoes's Hygëia, vol. ii. p. 23.

2. Our aliment is changed into chyle by a mixture of a number of animal juices secreted from the blood, and consequently is the more easily animalized.

When the chyle is first admitted into the blood-vessels, it is of a milky colour; but this substance, as has been already explained [*], in the course of its circulation, passes through the lungs, and comes in contact with the atmospheric air, which is drawn in by those organs. By that contact it not only receives that red or florid colour, by which arterial blood is distinguished, but also other properties serviceable to the human frame.—Thus the complete formation of the blood is effected; and by these means, the immense variety of aliments which the bounty of heaven has provided, on the earth, in the air, and in the waters, for the sustenance of man, is, by a wonderful mechanism, reduced at last to one red, uniform, vital fluid, proper to nourish and support the human frame [†].

SECT. III. *The Process of Assimilation and Nourishment.*

WE have now seen, says an intelligent author [‡], the progress of digestion, and the formation of the blood, in so far at least as we are acquainted with them. But for what purposes, it may be asked, is this blood employed, which is prepared with so much care, and for the formation of which, so great an apparatus has been provided? These questions may be thus resolved. The parts of which the body is composed, it has been already observed, are continually changing. In youth, they are increasing in size and strength; and in mature age, they are continually exerted, and, consequently, perpetually liable to waste and decay. It is necessary, therefore, that materials should be provided, for increasing, repairing, or renewing the bones, the muscles, the ligaments, the membranes, and all the various organs of the body; and these materials should be in perpetual circulation, that they may be ready at hand whenever they are wanted. Accordingly, all the substances necessary for the human body are laid up in the blood, circulated with it, and are drawn from that fluid, as from a storehouse, whenever they are required. The process, by which the different ingredients of the blood are made part of the various organs of the body, is called ASSIMILATION*.

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[*] See Part I. Chap. I. On Air.

[†] Mackenzie's History of Health, p. 345. Such is the influence which this fluid is supposed to have upon our moral, as well as natural life, that greatness of soul and sentiment, every noble and heroic act, are attributed, almost proverbially, but figuratively, to a particular degree of excellence *in the blood*, transmitted down to us from the veins of our ancestors.—*Collignon's Inquiry into the Structure of the Human Body*, p. 17.

[‡] Dr. Thomson. See his System of Chemistry, vol. iv. p. 699.

Of the nature of assimilation, excepting that the process, in all probability, is principally carried on during sleep, we know but little. The junction, however, of fractured bones, and the healing of the wounds of the body, put the existence of the process beyond the reach of doubt.

The process of assimilation, at the same time, must excite the most unbounded admiration; for, wherever there is any defect, the precise substances wanted, are always carried to every organ of the body. A bone, for example, becomes diseased, and unfit for the use of the animal; a new bone is therefore formed in its place, and the old one is carried off by the absorbents. Whence comes it, that a proper quantity of the material necessary for that purpose, is carried to that particular place; and by what wonderful agency is it, that the old, diseased, and imperfect materials are carried off, and that a new bone is formed in their room? These are circumstances beyond the reach of human understanding; yet such miracles are every moment exhibited in the human frame.

SECT. IV. *Of the Excretions, or the Manner in which those parts of the Food, which are not necessary for the Nourishment of the Body, are disposed of.*

IT is well known, that none but the finer, the more balmy, and the more nutritious juices of the food we take, are properly admitted into the system. The remainder is expelled, 1. In a solid; 2. In a liquid form; or, 3. By perspiration.

1. The excrementitious matter, which is evacuated by the *anus*, consists of that part of the food which was not converted into chyle*. It is entirely altered from its ori-

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* Thomson's System of Chemistry, p. 743.

† A very great difference is observable in different constitutions, in regard to the evacuations by stool. One man never went but once in a month; another had twelve stools every day for thirty years, and afterwards seven in a day for seven years, and, in the mean time, did not fall away, but rather grew fat. See Heberden's Commentaries of Diseases, p. 16.

ginal state, partly by the decomposition which it underwent in the stomach and intestines; and partly by its combination with certain articles furnished by the bile.

That the body should be enabled to discharge the useless, and, indeed, noxious matter, which all solid aliment, in a greater or lesser degree contains, is a proof of the wonderful art and contrivance with which the human frame was formed. When that matter is retained in the body for only a short time, after the proper time of evacuation, what serious consequences result from the retention! The whole frame becomes disordered, the appetite is lost, and food itself, at other times so acceptable, is turned from with disgust.

In discussing this part of the subject, it may be proper to consider; 1. The rules regarding this evacuation, when the body is in a healthy state; 2. The rules to be observed when the body is costive, or the evacuation scanty or irregular; and, 3. The measure to be adopted, when the discharge is too abundant.

1. *General Rules.*—It is particularly desirable to have a regular evacuation every morning, either before or after breakfast. There is no rule in the medical department of greater consequence. Habit renders it almost always possible; and the attempt to keep up this habit, should on no account be neglected.

The best means of promoting this evacuation, are as follow. 1. A due attention to bodily exercise. 2. A quantity of liquid, in proportion to our solid food, in particular at dinner, to be taken in a cold state, as warm diluents have a tendency to increase obstructions. Water, either pure, or mixed with white wine, or weak, well fermented, and well hopped beer, are excellent beverages, with a view to regular evacuation. 3. A proper choice, and a proper quantity of solid food. 4. Avoiding too much indulgence in sleep, which has a tendency to promote a discharge by the skin, at the expence of that by the bowels*. 5. Laying aside all strait garments, especially laced stays, and tight waistbands†.

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* Rising early, and going abroad in the open air, is favourable to regularity in this respect. Not only the posture in bed is unfavourable to regular stools, but also the warmth, which, by promoting perspiration, lessens all the other discharges. This is one of the strongest arguments in favour of early rising.

† Willich's Lectures on Diet and Regimen, p. 513; and Turnbull's Medical Works, p. 138.

It is very unfortunate to be disappointed, when nature requires this evacuation. The inclination, when once lost, does not recur for some time, and the bowels ar provoked, in vain, to resume their action, till another day*

The feces, in a natural state, should be of a due consistence, between the two extremes of hardness and looseness; '*oportet sanorum sedes esse figuratas.*'

2. *Costiveness.*—When the stools are either scanty, o irregular, the body is said to be costive; and hence many disorders arise, as headachs, toothachs, difficult breathing flatulency, eructations, spasms, palpitations of the heart &c. Hence, also, peevishness of temper, general lethargy and at length hypochondriasis.

Costiveness, in common cases, proceeds from variou causes, as from the nature of the food†; from the heat o the air; too much exercise, especially on horseback; from a long use of cold insipid food, which does not sufficientl stimulate the intestines; and from drinking rough re wines, and other astringent liquors. It is also occasione by keeping the body too warm; by wearing flannel; by lying too long in bed; by excessive labour; by intens thought; by sadness, grief, and sedentary life‡. It i likewise frequent in old age, from the diminished powers o the body.

Costiveness, however, is also occasioned by other causes as by a deficiency of bile, or of other juices required i the stomach and intestines; sometimes, also, by lead i various forms, and the fumes of quicksilver; sometimes by a blow, or a sprain in lifting a great weight; and, in one case, it is said to have happened, from the patient having taken much rust of iron§.

Costiveness, even to a considerable extent, will prevail in robust and otherwise healthy people, without immediate injury; but this constitutional costiveness is of dangerous tendency, and it is desirable to rectify it*.

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* There is every reason to believe, that several of the disorders incident to females, take their rise from neglect in regard to this necessary evacuation; and that disease, sooner or later, is frequently the consequence of false modesty.—*Taylor's Remarks on Sea-water*, p. 62.

† London bread has a great tendency to promote costiveness. It is commonly watered with a solution of alum, to render it light, and to give it whiteness. Pieces of undissolved alum have often been found in London bread; and the dealers of alum, will in general acknowledge, that they sell more of that article to the baker, than to all the other manufacturers put together.

‡ Buchan's Domestic Medicine, p. 390. The late Doctor Donald Smith of Edinburgh, the best Celtic scholar of the age, though a medical man, fell a sacrifice to costiveness.

§ Darwin's Zoonomia, vol. ii. 38.—Does not this fact furnish a hint, that the rust of iron may be of use in fluxes?

When an eminent physician, Sir Charles Scarborough, was consulted by the Duchess of Portsmouth, what remedy he would recommend for this complaint, he jocosely answered, 'You must eat less, or use more exercise, or take physic, or be sick.' The modes of removing costiveness, and avoiding the last alternative, *sickness*, may be considered under four general heads: 1. Habit; 2. Useful practices; 3. Diet; and, 4. Either gentle or violent medicine.

1. The celebrated philosopher Locke, who was himself a physician, has entered much at length into the subject of useful practices, in regard to costiveness. He observes, that going to stool regularly, has a great influence on the health; and he asserts, that if any person, after his first eating in the morning, would presently solicit nature, so as to obtain a stool, he might in time, by a constant application, bring it to be habitual†.

Costiveness, (as has been already hinted at), is sometimes owing to the use of flannel, which, by increasing the perspiration beyond what nature requires, dries up the humours, and absorbs the fluid particles of the body. To prevent that error, where flannel must be used, it ought to be thrown off at night, by which perspiration will be considerably diminished. This rule cannot be too strictly observed.

2. An ancient practitioner in physic, often advised those who were costive, and went to stool with great difficulty, to sit over a pot with hot water in it; which was soon attended with an easy dejection or stool; the body drawing up the vapour, which provoked expulsion of the excrements without much straining‡. It is said that what are called *steam boxes*, have recently been invented for that purpose.

3. Costiveness also may be removed by a moistening and laxative diet, as ripe or cooked fruits; for instance, roasted or boiled apples, pears, stewed prunes, raisins;

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* Hamilton's Observations on Purgative Medicines, p. 9.

† See Locke's Thoughts concerning Education, par. 23, 24, 25, 26, 27, 28, where the subject is very fully discussed. It is a treatise which, on many accounts, merits the attention of parents.

‡ Smith's Curiosities of Common Water, &c. p. 49.

gruel with currants, butter, honey, sugar, and such lik broths with spinage, leeks, and other soft pot-herbs; al beet-root and turnip. Bread made of fine flour ought t be avoided; rye-bread, or a mixture of wheat and rye, preferable.

The drink should be of a mild aperient nature; as f instance, malt liquor, if fine, and of a moderate strength butter-milk, whey, and other watery liquors, are likewis proper, and may be drank in their turn, as the patient inclination directs*.

The use of the expressed oils of mild vegetables†, olives, almonds, pistachios, and the like, and even animal oils, are strongly recommended by the celebrated Arbuthnot‡.

Bathing, likewise, has sometimes been found of servic in removing costiveness.

As obstructions and costiveness, are often owing to a luxurious mode of living, and to the custom of making to many meals during the day, we ought never to take a ne supply of food until the stomach is cleared of the precedin meal§.

Those whose bowels are irregular, unless under the directions of a skilful and attentive physician, ought to b dissuaded from an habitual use of purgatives. When persons have too frequent recourse to medicines for preventin costiveness, they are too apt to injure their constitution Drastic medicines, constantly repeated, weaken the bowels hurt the digestion, and every dose paves the way for another till at length they become as necessary as daily bread hence a relaxation of the bowels, loss of appetite, wasting of the strength, and death. Those who are troubled with costiveness, ought, if possible, to remove it by diet rather than drugs, or at least by the use of oil. They should likewise go thinly clothed, and avoid every thing of an astringent, or of a heating nature[*].

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* Buchan's Domestic Medicine, p. 590.

† A friend of mine, inclined to be costive, after consulting the most eminent physicians he could meet with, at last adopted the following plan which he found an effectual remedy for that complaint. He takes thre full table spoonfuls of olive oil, nearful one spoonful of vinegar, and th yolk of two boiled eggs, to which he adds a little common salt. He eats thi at dinner, with salad, in the spring and summer, with boiled pease or bean in the autumn, and with raw celery in the winter. This prevents costiveness, and is, at the same time, a nourishing diet.

‡ Arbuthnot on Aliment, p. 248.—A proportion of oil in our aliment appears also to be requisite to keep the alvine evacuations in a regular state Whether this effect be produced by its lubricating the bowels, and thus facilitating the passage of the food through them, or by its assisting to generate bile, or to form the natural mucus of the intestines, I cannot determine but, from repeated experience, I have good reason to think the fact sufficiently ascertained.—*Falconer's Observations on some of the Articles of Diet and Regimen*, p. 30.

§ Willich's Lectures on Diet and Regimen, p. 512.

4. But as medicines are too often necessary, it may be proper to consider what are the best calculated for removing this complaint.

Galen has called bleeding and purgation the two legs of physic. The first ought certainly to be cautiously administered; and purgations, though less dangerous, ought not to be rashly prescribed[†].

The pernicious effects resulting from the abuse of purgative medicines, are certainly great. They affect not only the stomach and bowels, but the system at large; and sometimes the finer particles of medicines are taken into the habit, and mixed with the blood; which can be of no service to that valuable substance[‡].

Purgatives are of two sorts, lenient and drastic. Manna is an example of the one, and scammony of the other[§].

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[*] Buchan's Domestic Medicine, p. 117.

[†] Celsus says, 'Sed purgationes quoque, ut interdum necessariæ sunt; sic, ubi frequentes sunt, periculum afferunt.' Lord Bacon has some useful remarks on preparations before purging, and settling of the body afterwards.—*Code of Health*, 2d edit. vol. iv. p. 285.

[‡] See Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacution, p. 18.

[§] An intelligent friend has sent me the following observations on the subject of purgatives:

"When the lacteals are scoured, and their mouths are in a condition to absorb,—nutrition, with increase of strength, cannot fail to be the consequence.

"In the choice and exhibition of cathartics in the human frame, much attention and discretion are required.

"The drastic purges act as hydragogues, and do not increase the strength. They pass rapidly through the alimentary canal, produce a copious discharge of lymph, but they do not carry off that viscid mucus, by which the lacteals are clogged in various cases of disease. These drastic cathartics are gamboge, scammony, and jalap, &c.

"The most efficacious deobstruent we possess is calomel. Two or three doses, of from three to five, six, eight, or even ten grains, given at night, and at proper intervals repeated, carry off viscid mucus beyond any other cathartic with which I am acquainted. In the exhibition of this medicine, with this intention, the use of acids must be for the time prohibited, because they would make the calomel too active, and defeat our purpose. The intervals of exhibition should be three or four days.

"Next to calomel, colocinth seems to have most power in cleansing the first passages; and next to this comes senna.

"After calomel, rhubarb strengthens the digestive organs, and restores

Instead of medicine, some are accustomed to take glysters or injections, or what the French call *Lavemens de precaution*[*]; and many, by the use of them at a stated hour, have brought on a regular habit of evacuation. Asclepiades, and some others of the ancients, were of opinion, that glysters were sufficient in most distempers. They influence the mass of blood; for they quicken the pulse, and facilitate the secretions of sweat and urine. They ought, however, to be mild, so as not to irritate the intestines.

In a recent publication, the use of glysters of cold water has been strongly recommended for costiveness, when occasioned by parched extremities, or in slow fevers; and such injections, it is said, have not only given relief when the stools were costive, consisting of hard lumps covered with mucus, but they have also prevented that constricted state of the bowels, by which the hardened and divided stools seem to be formed[†].

Before the subject of purgative medicines is concluded, it may be proper to make some observations on a doctrine inculcated by the celebrated Lord Bacon, that nothing contributes so much to health and long life, as frequent and domestic purgations; and also to state some opinions recently published, recommending drastic purges as the most effectual remedy for various disorders.

Lord Bacon's position is, "*Nil tam ad sanitatem, et longevitatem conducit, quam crebræ et domesticæ purgationes*[‡]."

It is a common observation, that few men are strictly temperate when they sit down to pleasant food. Hence it comes to pass, that want of health is a frequent attendant upon affluence, because the rich are disposed to exceed the bounds of moderation, and to overload the alimentary canal. In such circumstances, the best preservative against disease, is to hasten the discharge of this superabundance from the body, by some slight cathartic, such as may give relief, without impairing the powers of digestion.

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[*] Le Medecin des Hommes, p. 406.

[†] Old people, however, should be extremely cautious not to live always upon the same laxative food, or to take *the same purgative remedies*, lest, becoming too familiar to the body, they may not always have the same effect.

[‡] Manual of Health, p. 282, 283, &c. In page 284, there is a singular story, connected with the subject of *Lavemens*, regarding the lively Duchess of Burgundy, who was the Rosalind of the court of Louis XIV. and was accustomed to take them previous to her going to the theatre. Some intelligent physicians are of opinion, that they ought to be more used in this country than they are, being *simple, prompt*, and, if properly administered, *active*.

As we advance in years, moderation becomes more and more essential to the preservation of health. When we have arrived at the acmé of our growth, the quantity of food should be diminished; because one principal purpose of the increasing demand has been completely answered, and nothing remains to be provided for, but the daily waste.

Nature herself suggests to us the necessity of temperance, and provides a remedy against repletion. For, as from our infancy, till we arrive at maturity, the number of teeth are constantly increasing, and with our increasing years, new grinders are produced; so, when we have reached our acmé, the last acquired teeth are the first in their decay, and in our decrepitude, not one tooth probably remains.

It is well understood, that plethora produces palsy.—Next to occasional abstinence, or habitual temperance, therefore, no remedy can be so effectual as that recommended by Lord Bacon, the "*Crebræ et domesticæ purgationes.*"

So much for plethora, and for the diseases attendant upon it, as their immediate cause.

But independently of this, should the intestines themselves be overloaded, various diseases must be the consequence. Among these, and not the least formidable, is to be reckoned the apoplexy, so fatal to both young and old, who, beyond the bounds of moderation, indulge their appetite for food.

Acute diseases are commonly attended by inflammatory symptoms, at least at their commencement; and these never fail to be aggravated, when the intestines happen to be loaded with indigested sordes. Hence, on their first attack, the expert physician is ever anxious to begin his operations, by evacuating the alimentary canal. But, frequently it happens that he is called in too late;—the strength of the patient has been exhausted by the disease; and the whole class of evacuants must then be most sparingly applied.

Now, had the patient either been sufficiently temperate in his quantity and choice of food; or had he been in the habit of cleansing, from time to time, the alimentary canal, by domestic physic, he would not stand in need of powerful evacuants, such as the cautious physician is unwilling to apply.

We shall now proceed to the other point that remains to be considered, namely, the exhibition of powerful purgative remedies in disease.

An eminent physician has recently published a work on purgative medicines, in which he remarks, that by preserving at all times the regular alvine evacuation, we would prevent the formation of various disorders altogether; and that purgative medicines, properly applied, are the best means of curing them. The facts he adduces, serve very strongly to corroborate the doctrine he wishes to establish*.

Dr. Hamilton observes, (p. 6), that the constipated and loaded state of the intestinal canal, is a common cause of general bad health; often accompanies and aggravates the other symptoms of fever; is the immediate source of various disorders peculiar to children and young people; and also occasions other serious complaints, which arise in mature age, and in the decline of life†.

It is necessary, he justly remarks, for those, who either wish to preserve good health, or who are in quest of the lost treasure, to attend to, and to regulate their alvine evacuations‡.

It may be proper, he adds, on some occasions, to propose to them, to forsake the haunts and habits of fashionable life, to leave the crowded city, alluring amusements, or serious occupations, conducted in airless, or even in tainted rooms; to shun luxurious tables, indolence, and late hours; to retrace the footsteps by which they have deviated from simple nature; and to court the country, pure air, moderate exercise, and simple diet§.

This advice, however, often cannot be followed; and it will not always remove unhealthy costiveness, and the mischiefs which proceed from it. In this case, as well as the costiveness which accompanies disease, the interposition of purgative medicines is necessary.

3. *Looseness.*—Stools, however, may not only be too hard and scanty, but they may be also too loose and abundant: hence arise what are called fluxes, disorders in the bowels, diarrhœa, &c.

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* See Observations on the Utility and Administration of Purgative Medicines, by James Hamilton, M. D. p. 140.

† I have found a purgative of use in colds, when the stomach was loaded with phlegm.

‡ P. 7.

§ Hamilton's Observations on Purgative Medicines, p. 7.

There are unfortunate complaints; for, as Cheyne has justly remarked, those who have slippery bowels can never get strength[*]; and, bad as costiveness is for the weak or the aged, yet they can bear a costive habit much better than fluxes or purging. At the same time, it is proper to observe, that fluxes are sometimes the salutary efforts of nature, to rid itself of pernicious substances[†]. Such discharges must be of use, when the habit is full; and an eminent physician has therefore recommended it as an useful caution, not to be too hasty in stopping a recent spontaneous purging, as it may frequently be useful, and, it may be found advisable to co-operate with nature, in promoting this evacuation[‡].

Looseness is often the effect of immoderate eating. Part of the food, not being properly digested, passes off in this way, and nature thus relieves herself of a load for which she had no occasion.

As an habitual looseness is often owing to an obstructed perspiration, persons affected with it ought to keep their feet warm, to wear flannel next their skin, and take every other method to promote perspiration[§].

Such persons as are troubled with an habitual looseness, ought likewise to suit their diet to the nature of their complaint. They should use food which braces and strengthens the bowels, as wheaten bread made of the finest flour, biscuit, cheese, eggs, rice boiled in milk, and the like. Their drink should be red port, or claret, instead of white wine[‖]. They cannot be too cautious in the use of watery, saline, and easily fermentable articles of food and drink; and they ought to avoid violent fits of anger, and the indulgence of other passions.

Such complaints, however, are not to be trifled with; but the best medical advice should be taken early, to check or to remove them, by the aid either of regimen or of physic[¶].

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[*] Essay on Health, p. 38; and Locke observes, that people who are very loose, have seldom strong thoughts or strong bodies.—*Thoughts on Education*, Sec. 23.

[†] An old woman, Elizabeth Alexander, now living in London, aged above 100, is periodically liable to a relaxation of the bowels, after which she always enjoys for a time better health.

[‡] See Heberden's Commentaries on the History and Cure of diseases, p. 145.

[§] Buchan's Domestic Medicine, p. 113.

[‖] Ib. p. 118.

[¶] In common complaints of the bowels, the following remedy may be tried.—Let 15 grains of rhubarb be put into a table spoon, and filled up

II. Urine is formed, by the operation of two organs of the body, called the kidneys. A very great proportion, if not the whole of the blood, passes frequently through these organs; in the course of which, they separate the urine from the blood, and transfer it to the bladder, for the purpose of its being immediately evacuated.

No animal secretion has attracted more attention than urine, both on account of its supposed connexion with various diseases, and on account of the very singular products which have been obtained from it. Chemists have found in healthy urine, no less a number than seventeen different substances; but when it is diseased, the number is increased; and when it is putrefied, a variety of new products are found in it[*].

The formation of urine, is of infinite consequence to the animal economy. By the preparation of that substance in the kidneys, the blood is cleared from too great a quantity of saline matters, and from a variety of putrid particles which would be noxious to the body. Indeed, of so much importance is the separation of urine from the blood; and the changes produced therein, by the action of the kidneys, are so essential for qualifying the blood to answer the purposes for which it was intended, that if the kidneys are unable, from disease, to perform their functions, the animal must perish.

The evacuation of urine, and of the acrid and deleterious particles which it contains, is absolutely necessary for the preservation of health, and ought not, on any account, to be postponed[†]. Some, like Tycho Brahe, have lost their lives, and others have brought on tedious, as well as incurable disorders, by retaining, from a false delicacy, their water too long. The calls of nature, therefore, ought never to be put off. Delicacy, is, doubtless, a virtue, but ought never to be carried to an extreme, so as to induce any one to risk his health, or to hazard his existence[‡].

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with rum: set fire to the rum, and let it flame till it can burn no longer: then mix it with 15 grains of magnesia, and 5 drops of laudanum; and take the whole, at night or morning, in a wine glassful of peppermint water. In the West Indies they take castor-oil in a similar manner. They set fire to a tea-spoonful or two of rum, over a large spoonful of the oil, then extinguish the flame, and swallow it.

[*] See Thomson's System of Chemistry, vol. iv. p. 642, &c.

[†] A young lady, confined in a stage coach for many hours, brought on a dangerous suppression, which was happily removed by the use of the *hot bath*, the best remedy on such occasions.—*Valangin's Treatise on Diet*, p. 172.

[‡] Buchan's Domestic Medicine, p. 119. In a work lately printed at

As a free discharge of urine not only prevents, but actually cures many diseases, it ought by all means to be promoted; and every thing that may obstruct it should be carefully avoided.

It is less dangerous to suppress the evacuations by stool, than those by urine; for if the latter remains too long in the bladder, it becomes acrid and corrosive*.

Urine, on the one hand, should neither be too long retained, which may occasion inflammation, or a deposition of sediment, and thus lay the foundation of calculus or stone; nor should it be too often evacuated, for thus the bladder becomes narrowed, thickened, and contracted, and loses in some degree its conical and natural size and shape†.

But urine may be in too great, as well as too small a quantity. This may be occasioned by drinking large quantities of weak watery liquors, by the excessive use of alkaline salts, or any thing that stimulates the kidneys, dilutes the blood, &c.‡

Turbid water, with sediment like brick-dust, ought not to occasion any alarm. Its proceeds from the critical discharge of what was preternaturally retained in the habit§.

Connected with discussions regarding urine, is the *calculus urinæ*, or that disposition, either in the blood, or in the urine, to form stony concretions; but as it belongs more properly to medicine than to diet, it is not proposed to dwell on it in this place. The use of soda water is certainly of service; but is apt to promote a relaxation in the bowels. Lime-water, soap-leys, and some descriptions of

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Paris, there is a section—'*De l'importance de satisfaire aux besoins naturels*,' in which there are the following just remarks: 'Les femmes sont souvent victimes d'une fausse honte, que l'intérêt de leur santé, mieux entendue, leur ferait surmonter facilement. On a vu des maladies incurables, et meme mortelles, occasionnées pour avoir retenu trop long-tems son urine, &c Dans sa voiture, dans les voitures publiques, dès que le besoin se fait sentir, il faut faire arreter, descendre, et le satisfaire.—*Médecin du Voyageur, par le Docteur Duplanil*, tome i. p. 63.

* Willich's Lectures on Diet and Regimen, p. 519.

† Turnbull's Medical Works, p. 143. When the urine is too long retained, it is sometimes again taken up into the mass of fluids; and what remains stagnant in the bladder, becomes thicker, the more watery parts fly off, and the more gross and earthy particles remain behind. By the constant tendency which these have to concrete, the formation of stones and gravel in the bladder is promoted. Hence it comes to pass, that indolent and sedentary people are much more liable to these diseases than persons of a more active life.—*Buchan's Domestic Medicine*, p. 119.

‡ Buchan's Domestic Medicine, p. 120.

§ Cheyne's Essay on Health and Long Life, p. 140.

mineral waters, also magnesia, have been found useful in these complaints[*].

Of late, a disease has become extremely prevalent, of a nature more horrible than even the stone itself; it is a stricture in the urethra, by which the evacuation of urine is prevented. This disorder, which fortunately is not known to females, is perhaps the most dreadful malady to which the male sex is exposed; and nothing is more necessary, than early to warn the young and ignorant, of the tortures to which they may subject themselves, by thoughtlessness and indiscretion[†].

III. Perspiration is the last act of perfect animal digestion[‡]; and of all the natural evacuations, none is so important, or so extensive; none is carried on with less interruption; and none frees the body from so many impurities, particularly from those thin and acrid humours which are so noxious to the human frame.

In considering this subject, it is proposed to discuss the following general heads: 1. The nature of perspiration in general; 2. The divisions thereof; 3. The quantity that ought to be perspired; 4. The circumstances which promote perspiration; 5. Those which obstruct it; 6. Proportion of perspiration to the other discharges; and, 7. General observations regarding that important function.

1. Perspiration is a subtile and invisible vapour, con-

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[*] Sir William Temple recommends *alehoof*, or ground ivy, as a specific remedy, or prevention for the stone, both on his own experience, for about ten years, and that of others. See his Essay on Health and LongLife. Code of Health, 2d edit. vol. iv. p. 355. There are some valuable observations on the subject of the stone, in Heberden's Commentaries on the History and Cure of Diseases, p. 80. In Anderson's Medical Remarks on Natural, Spontaneous, and Artificial Evacuation, there is an account of a stone having been evacuated by the use of Castile soap, and the water of a spring at Coombe-hill, near Hampton-Court palace; the water of which is so pure, that no fur will adhere to the inside of the culinary vessels where that water is constantly used, see p. 97. It may be proper to add, that where there is a difficulty in making urine, owing to a palsy in the parts, it has often been got the better of by electricity. The application, also, of hot water, has been found of service. Smith's Curiosities of Common Water, p. 49. See, also, Swan's Sydenham, p. 586, where there is an excellent dissertaion concerning bloody urine from a stone in the kidneys.

[†] This subject is very properly touched upon in the Manual of Health, Appendix, No. 3, p. 896, under the title of 'Article qui n'est pas fait pour les Dames.' It concludes with the following judicious observation.—'If there existed a society for the circulation of tracts, to promote prudence among young men, a few of these histories, related without the least exaggeration, must, one would hope, have a good effect, by teaching them how much they will have to suffer from disease, and how much more from the surgeon.'

[‡] Arbuthnot on Air, p. 167. Lynch on Health, p. 142.

stantly flying off from the surface of the body, though ever so cautiously protected by clothes, &c. It gives quickly a tincture to whatever is applied to it, which, when examined with the best microscopes, appears to be composed of the several constituent parts of the solids and fluids, which constantly exhale and perish*.

For the discovery of the nature, importance, and extent of perspiration, or what may be called the *static* system of medicine, we are indebted to the celebrated physician Sanctorius, who established, by the labour of 30 years, the existence of this discharge, beyond the possibility of doubt; and whose doctrines have since been sanctioned by the experiments, and supported by the authority, of many able men.

2. Perspiration is divided into two sorts, the one called *sensible perspiration*, because it is rendered visible to the eye; the other *insensible*, which is discharged in the shape of vapour.

When the perspirable matter collects in drops, it is known under the name of *sweat*. This substance appears on the surface of the body, after violent exercise; and if carried to excess, it is extremely weakening, as it carries off with it many of the most nutritious particles of the blood; but it is sometimes of use, by supplying a watery excretion; and by expelling, in disease, the morbid matter from the body. In fevers also, the heat of the blood may thus be diminished. If it is rendered, however, habitual, as in the case of night-sweats, it is apt to lay the foundation of consumption, and other disorders of a most serious nature.

Insensible perspiration, is perfectly invisible, and passes off in small quantities at a time; but chemists have ascertained, that, among the substances perspired, water, carbon, an oily matter, and an acid, are certainly constituent principles†.

The nature of this discharge, is thus elegantly described by the Poet of Health.

> For thro' the small arterial mouths that pierce
> In endless millions the close-woven skin,
> The baser fluids, in a constant stream
> Escape, and viewless melt into the winds.

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* Barry on Digestion, p. 2; also, Lewenhoeck, tom. iv. Epist. 42. One may judge of the importance of perspiration, from the black offensive matter which is collected between the toes, or adheres to the neckcloth, and other parts of the dress.

† Thomson's System of Chemistry, vol. iv. p. 732.

While this eternal, this most copious waste
Maintains its wonted measure, all the powers
Of health befriend you, all the wheels of life
With ease and pleasure move: but this restrain'd,
Or more or less, so more or less you feel
The functions labour:—from this fatal source
What woes descend, is never to be sung[*].

3. The quantity of this discharge is very great, as it is constantly going on, day and night, through innumerable pores, every where spread over the surface of the skin[†].

It has not yet been determined, what quantity of perspiration is necessary for the maintenance of health. Sanctorius says, that if the meat and drink of one day, amounts to eight pounds, the insensible perspiration usually arises to about five pounds, the urine to about thirty-two ounces, and stools to about four ounces. But that calculation was made for the climate of Italy[‡]. In Britain, the quantity of perspiration is less; in tropical climates, more. But, in general, it may be stated, that a person of middle stature, and in perfect health, will perspire from three to four, and even five pounds weight, according to circumstances, within the space of twenty-four hours[§].

4. Perspiration is promoted by various ways, as, 1. By the food we eat, some substances being lighter, and more perspirable than others, and, consequently, easier converted into that subtile vapour, which is discharged by the skin. 2. Fermented liquors, by agitating the blood, and promoting circulation, and by strengthening even the solid parts, are supposed to aid and augment perspiration[‖]. 3. Moderate bodily exercise, walking in particular, is favourable to this function. 4. Stretching and expanding the limbs, so as to quicken the circulation of the blood, must be of service. 5. Perspiration is promoted by proper clothing, adapted to the season of the year, and by a regular change of the linen worn next to the person, which, in hot climates, must be done frequently, and even in cold ones once a day. 6 Perspiration is much promoted by attention to the skin, keeping it clean and moist. 7. Bathing in warm water evidently tends to promote perspiration. 8. When necessary,

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[*] Armstrong's Art of Preserving Health, book iii. line 256.

[†] Adair's Medical Cautions, p. 174 and 180. The calculations are by Lewenhoeck.

[‡] Robinson's Dissertation on the Food and Discharges of Human Bodies, Pref. p. 4.

[§] Ibid. p. 87.

[‖] Le Medecin des Hommes, p. 121.

warm liquids, and sudorific remedies, are often necessary to promote perspiration in disease. Lastly, The emotions and passions of an exhilarating nature, tend to promote and increase it.

5. Obstructed perspiration, on the other hand, dries up the skin, injures the smaller vessels, augments the bulk of humours, occasions a heaviness, perceivable by the senses, and an increased weight of the body, and is certainly one of the principal sources of disease; indeed, few disorders attack us when that function goes on properly.

Obstructed perspiration, in general, arises from the following circumstances: 1. From moist and cold air. Where the air is pure and healthy, the fibres are strengthened, and the matter retained is neither dangerous nor painful: But in a cold and moist air, the perspiration is stopt; the fibres relaxed; and the matter retained is both bad and unwholesome. 2. From improper food; for, too many oily, viscous, and crude articles of nourishment, have a strong tendency to obstruct the free perspiration of the body. 3. From violent pain. 4. From obstructions of the cutaneous vessels, frequently occasioned by the use of salves, ointments, and cosmetics. 5. From severe colds, particularly those contracted at night, and during sleep. 6. From nature being employed with other objects; and in particular, from the mind being engaged in concerns of an interesting nature, which excite strong emotions. 7. From neglect of exercise. 8. From want of cleanliness. 9. From improper clothing, as wearing too tight garments, and improper ligatures about the joints*. 10. From changes in the atmosphere, which happen so frequently in Great Britain. 11. From wet clothes; a well-known cause, and which therefore need not be dwelt upon. None but the most hardy can bear neglect in this respect. 12. From wet feet, which has proved the source of many fatal disorders. 13. From night air. The coolness of the air, and the dews which then fall, are highly unfavourable to perspiration. 14. From damp beds; which have often occasioned not only dangerous maladies, but death. 15. Damp linen, to which too little attention is paid. 16. Damp houses. This often happens from their being improperly situated, from being built of sea-stone, or from being inhabited too early. 17. Damp rooms. An attention to cleanliness has often occasioned the washing of rooms at a very unseasonable period, so as to be inhabited before they were perfectly dry. 18. Sudden transitions from heat to cold[*]. Frequent colds are caught in summer, by going from the burning rays of the sun to the cooling shade; and the first cold of autumn is more sensibly felt, because we are then unaccustomed to that impression. Lastly, Restless nights, fasting, or an increase of the other evacuations, obstruct perspiration[†].

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* Willich's Lectures on Diet and Regimen, p. 525.

6. In order to explain the superior importance of this discharge, it may be proper to give the following abstract of a very curious statical table, drawn up by Dr. Robinson, of the experiments he tried for eight months, commencing in April and ending in November, in the forty-second year of his age, which ascertains the medium proportion of the three discharges, in so far as the experience of one individual can be depended upon.

	Ounces.	Ounces.
Mean quantity of food per day,		86.31
Mean quantity of stool,	5.54	
Mean quantity of urine,	34.91	
	40.45	
Mean quantity of perspiration,	45.86—	86.31

Thus, it would appear, that, in the course of these experiments, a greater proportion of liquid and solid food was discharged by the skin, than by stool and urine. The result, however, of Dr. Robinson's inquiry is, that there is but one weight under which a grown body can enjoy the best and most uninterrupted health, namely, when the perspiration and the urine are nearly equal at all seasons of the year; for, by this means, the body will be uniformly drained of its moisture, the inward parts by urine, and the more superficial parts by perspiration, without any irregular and unnatural discharges, the morning weight of the body, also, will then continue nearly the same at all seasons of the year[‡].

Sanctorius has proved, that robust persons discharge the remains of their nutriment chiefly by perspiration, the weak chiefly by the kidneys or bowels; but in a state of great weakness, it passes off in the shape of undigested chyle[*].

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[*] Sanctorius advises us, very carefully to avoid the deceitful pleasure of suddenly cooling the body, when heated by air or exercise.

[†] Fothergill's Rules for Preservation of Health, p. 87.

[‡] Robinson's Dissertation on the Food and Discharges of the Human Body, p. 91.

7. We shall conclude with some general observations regarding this important subject.

Some contend, that too much stress is laid upon perspiration, for it is so very variable, and is so liable to be checked by many different accidents, that if life depended upon its being equal, we should not enjoy health for a single day. The importance of perspiration, however, may be judged of from our own feelings. Irregularities, in this respect, produce peevishness of temper, headachs, disturbed sleep[†], heaviness in the limbs, &c.; whereas we never find ourselves more lively and vigorous, nor are our health and spirits in a better state, than when that function is duly performed[‡].

The importance of perspiration, when combined with peculiar clothing, is exemplified by the following singular circumstances. Many Asiatic nations are induced to wear turbans to prevent the *coup de soleil;* and hence their skulls, from the perspiration which that occasions in the head, are remarkably thin; but they leave their necks bare, which are consequently remarkably thick and muscular. Many European nations, on the other hand, owing to the coldness of their climate, are led to keep their necks warm; but their heads are not so heavily covered as with a turban, nor are hats worn in the house; hence their skulls are thicker, and their necks more taper[§].

It has been observed, that one perspires less when the stomach is void; hence those who eat twice or thrice a-day, perspire better than those who eat but once.

There is no better mode of preserving an equal perspiration, than to accustom ourselves, from early youth, to the vicissitudes of heat and cold. This may be effected by walking every day in the open air, and washing the body with tepid, or, still better, with cold water, which braces the pores, and enables us to undergo the different changes of the weather and of the seasons.

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[*] Adair's Medical Cautions, p. 180.

[†] When we are restless in bed, it is often owing to the air in the bed, or under the clothes, being saturated with perspirable matter, and refusing to take any more. To become sensible of this by experiment, let a person keep his position in the bed, but throw off the bed-clothes, and suffer fresh air to approach the uncovered part of his body. He will then feel that part suddenly refreshed; for the air will immediately relieve the skin, by receiving, licking up, and carrying off the load of perspirable matter that incommoded him. This is the order of nature, to prevent animals being infected by their own perspiration. See Franklin's Essays.

[‡] Willich's Lectures on Diet and Regimen, p. 522.

[§] See Code of Health, second edit. vol. iii. p. 313 and 318, as to the different effects of wearing hats or turbans.

The exudation by the pores is most essential during the night, when the sleep is sound and refreshing; for the noxious particles alone are then expelled. The nocturnal perspiration also is more copious, from the greater uniformity of the surrounding atmosphere, and from the more regular warmth to which the body is then subjected. It is extremely unwholesome, however, to lie in bed too long, as that weakens the fibres, and promotes too abundant a perspiration; and sleeping on feather-beds also ought to be avoided, as it occasions a constant *vapour-bath* at night, which destroys the beneficial acquisitions of the day.

The young perspire a great deal more than the old. It would appear, that the texture of the skin, as life advances, becomes closer and more shrivelled, and less able to expel any substance through its pores. It is on this account, that old people have such a quantity of defluxion, which they evacuate by the mouth*. That defluxion always abounds most in the winter season, when perspiration diminishes.

To encourage perspiration, and to prevent an injurious load of defluxion, old people ought to keep themselves warm, to drink a little wine, to use moderate exercise, and to change their linen often. Warm bathing also, is of use to the aged, from its tendency to promote perspiration.

General Result.—The food we take, is at first divided into two parts. 1. The earthy and grosser particles, which are discharged by stool; and, 2. Particles which are absorbed, and added to the mass of circulating fluids. The latter part is applied, 1. To the purposes of nutrition; or, 2. Discharged by urine; or, 3. By perspiration. By these processes, the body, after having consumed several pounds of solid, and of liquid food, returns every morning to nearly its original weight.

The means by which this is effected, I have endeavoured, in the preceding pages, shortly to elucidate.

SECT. V. *Means of promoting Digestion.*

As the health and nourishment of the body entirely depend upon the proper and regular digestion of the food it consumes, there is no subject that can be of more importance, with a view to health, than to consider the means of remedying any deficiency or error in regard to this important function.

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* Le Medecin des Hommes, p. 119; also, Experiences de M. de Sault sur la Transpiration.

Indigestion may either be temporary, or settled; and the remedies must vary accordingly.

Temporary indigestion may be owing to various causes, as, the eating of too great a quantity of food; in that case, the bad effects of it may be prevented by abstinence, and not filling the stomach again, until it has got rid of its former contents. It may also be owing to the bad quality of the food; in which event, the noxious matter must be got rid of, sometimes by abstinence also, but generally by compelling a discharge, either by a vomit or a purge.

A settled indigestion may arise from, 1. Some weakness or disease in the stomach itself; or, 2. A deficiency or error in some of the secretions above described, as the bile, the gastric juice, &c.

1. Various modes have been thought of for strengthening the stomach. By pure air and moderate exercise alone, that may often be accomplished. Many have recommended various medicines for that purpose, some account of which it may be proper to give, without however becoming responsible for their success.

In Sweden, the elixir of Doctor Jernitz has been much celebrated; and, as a proof of its efficacy, it is said that the Doctor himself attained to the age of 104, his son to 100, and the whole of his family, by the constant use of it, lived to a great age. Numbers also in that country are said to have received great benefit from it*.

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* The following is the receipt for making this elixir, which was given me by a friend. It has been tried in England, and found serviceable to the stomach; and, by strengthening that important organ, it is said also, to render persons less liable to catch cold.

Receipt for making the Elixir of Longevity.

One ounce and one drachm of aloes, one drachm of zedoaria, one ditto of gentiana, one ditto of saffron from the Levant, one ditto of fine rhubarb, one ditto of theriaque of Venice.

Reduce the five first mentioned drugs to powder, and let them pass through a sieve; afterwards put them into a bottle, with the theriaque, and throw into it a pint of good brandy; stop the mouth of the bottle well with wet parchment, and when it dries, prick several little pin-holes in it, and put it up carefully for nine days, taking care to stir it well. On the tenth day, let the infusion be poured out gently into another bottle, as long as the liquor continues clear. The bottle containing this infusion, must be well stopped with linen. Afterwards, pour a second pint of brandy upon your drugs, for a second infusion, which you will leave other nine days in

An intelligent French author, (D'Aubenton), has written a short tract on the subject of indigestion. He observes in that work, that the human body has its periods of growth, of full vigour, and of decay; and that the exercise of all its functions depends, not only on the daily state of the body, but also on its periods, as connected with all the different ages of life. Digestion, in particular, follows the general law; its agents are weak in infancy, but they grow stronger from day to day: they acquire all their strength in youth, they subsist in a virile age, they begin to diminish in the age of decline, they grow much weaker in old age, and they are almost extinguished in decrepitude. It is at the commencement of decline, which, according to circumstances, varies from the fortieth to the forty-fifth, and even to the fiftieth year of the age of each individual, that the stomach begins to require peculiar care and precaution. People who have been subject to indigestions before, have them then more frequent and more violent; and those who almost never experienced them before, except on some very extraordinary occasions, begin to feel them, even from slight causes. Sedentary people are particularly subjected to these complaints.

The remedy proposed by M. D'Aubenton is, ipecacuanha in powder; the dose depending upon the quantity that will not excite any painful symptom of nausea, but sufficient to

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the bottle, well stopped like the former, and stirred well in the same manner. You must pour it, on the tenth day, into another bottle; and when you perceive that the liquor is no longer clear, put cotton into the funnel, and filtrate it several times, if necessary, *to have it quite clear.* Do not forget to put a piece of linen over the funnel, that the spirit or liquor may not evaporate. The two infusions should be mixed together, in a well stopped bottle, and you may make use of it immediately.

By the daily use of this remedy, it is said, that one may live for a very long time, without requiring bleeding, or any other medicine or preservative against contagious diseases. The small pox it throws out without any danger; and it has this admirable property, that one may safely take a very strong dose of it; and it is also serviceable in less doses, according to circumstances. For sickness at the stomach, one spoonful, *quite pure;* for indigestions, two spoonfuls in four of tea; for drunkenness, two spoonfuls, quite pure; for colicks, two spoonfuls in four of brandy; for fits of the gout, during the fit, and particularly when it is getting up, three spoonfuls, quite pure; for worms, one spoonful before eating, for eight days; for the dropsy, one spoonful in white wine, for a month; for intermitting fevers, a spoonful quite pure, before the cold fit; and, if the fever is not cured by the first or second dose, it will undoubtedly be so by the third. The only precaution necessary, while taking this elixir, is, to eat nothing raw, to take neither milk nor salad, and not to go too much into the open air. The quantity to be taken daily is, seven drops for women, and nine for men. Very old people should take besides, a spoonful quite pure, every eighth day.

excite a light sensation of the vermicular movement of the stomach, by which the phlegm may be separated and expelled from that organ. There are some people who can take to the amount of two grains without nausea, and others who cannot take more than a third or fourth part of a grain. It is proper to begin with a small dose, and to augment it gradually, if it is necessary, until the point in which the action of the remedy begins to be felt.

The ipecacuanha which he recommends to be taken, is the brown sort commonly used in medicine. The most favourable time for taking it is in the morning, fasting, or an hour or two before breakfast. The powder may be put in a spoonful of water or wine, or taken in the pulp of a roasted apple, or in sweetmeats, or lozenges.

The object of this remedy is, to clear off the phlegm or slimy matter which disturbs the action of the stomach. The secretion of the digestive liquor, or the gastric juice, is thus promoted, and the source of indigestion is removed.

D'Aubenton adds, that he had proved the effects of it, and that the remedy had surpassed his most sanguine hopes; indeed, he is said to have prolonged his own life, notwithstanding a naturally delicate constitution, to the age of eighty-four, by the use of this medicine; and he recommended it to many people, with whom it had the same success[*].

It is well known that the French in general, pay particular attention to the state of their stomach, not only on account of its importance with a view to health, but also as a means of greater enjoyment, by the pleasures which the table affords. I was therefore extremely desirous to ascertain what system was accounted the most beneficial, by the luxurious inhabitants of Paris, for preventing indigestion; and the following is the result of that inquiry.

The first rule is, for each individual to study well the nature of his stomach, which may be very strong in some respects, and very weak in others; for so capricious is this organ, that it can digest, with ease, ten times more of one food than of another. In general, indeed, it is not so much the quantity, as the quality of the food, and the manner in which it is dressed, which occasions indigestion. It is, therefore, asserted, by the most experienced *gourmand* of modern times (M. Grimod de la Reynier), that if you masticate well, and for a long time; if you will divide thoroughly, with the assistance of stale bread, every sort of food, particularly the more compact; if you will never swallow but small morsels of meat at a time, and only mouthfuls of liquor; and if you will add, *le coup d'après, le coup du milieu, le café, et les liqueurs*, you will seldom find yourself incommoded, even by the longest and heaviest dinner[*].

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[*] See Memoire sur les Indigestions, qui commencent à être plus frequentes, pour la plupart des hommes à l'âge de 40 ou 45 ans. Lu à la Société Royale de Médecine, le 26 Oct. 1784, par M. D'Aubenton. A translation of this interesting tract has been published, by Dr. Buchan of Percy-street. An eminent physician has given the following formula for ipecacuanha pills for stomachic purposes.

℞ Pulv. Ipecacuan. ℈ i.
—— Rhubarb. ℈ ij.
Syrup. q. s. f. Pil. N. xx.
Capt. j. hora somni quotidie.

This doctrine must, doubtless, be more acceptable than the ipecacuanha powders of M. D'Aubenton; and it is certain that the French, by following these rules, and rarely dressing their meat until it is rather tainted, are much seldomer troubled with indigestions than the English, though, in general, they eat much greater quantities, both of animal and of vegetable food. They retain also their health, their vivacity, and their good humour, till a very advanced period of life.

During the night, bile, phlegm, and other noxious matters, must increase more in the stomach, than in the daytime, not being purified by fresh air, nor expelled by exercise. In order to wash out the noxious matter thus accumulated, it has been proposed to take a large tumbler of hot or of cold water, every morning, when the stomach is empty[†]. A person who had been accustomed to drink Tunbridge water for that purpose, from the use of which he had derived much benefit, being prevented from going one season, drank the same quantity of water, taken from the pump of a spring in his own yard, which did him as much service, on which he wrote these lines upon his pump:

> Steel is a cheat;
> 'Tis water does the feat[‡].

At the same time, the mineral particles, and the fixed air with which mineral waters generally abound, enables the stomach to bear greater quantities of them, (which in some cases is useful), than otherwise it could do.

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[*] Almanac des Gourmands, seconde année, p. 286. The *coup d'après*, is a glass of generous wine, after broth or soup. The *coup du milieu*, is a glass of rum, or other spirits, in the middle of your dinner.

[†] This, however, is only a palliative; and the drinking repeated doses of hot water, for indigestion, and pains in the stomach, (a practice which some have adopted), has injured many stomachs.

[‡] Smith's Curiosities of Common Water, p. 82.

Elixir of vitriol is accounted an excellent medicine in most cases of indigestion, weakness of the stomach, or want of appetite. From twenty to thirty drops of it may be taken twice or thrice a day, in a glass of wine, or of water. It may likewise be mixed with the tincture of the bark, one drachm of the former to an ounce of the latter, and two tea-spoonfuls of it taken in wine and water, as above directed. It must not, however, be too frequently repeated.

Chalybeate waters, if drank in moderation, are generally of considerable service in removing indigestion; and persons who are afflicted, either with indigestion or want of appetite, cannot do better than to repair to Cheltenham, Harrowgate, Scarborough, Moffat, Peterhead, Pitcaithly in Perthshire, and other places of public rendezvous. The very change of air, and the cheerful company to be found there, will be of service; not to mention the advantages to be derived from exercise, amusements, &c.*

Preparations of iron have also been found of great service in stomachic complaints. And Dr. Beddoes states, that the red sulphate of iron deserves the preference, above all other preparations of that sort, and indeed above tonics in general, as a remedy for simple indigestion. This medicine, he adds, almost infallibly cures, in the dose of a few drops†.

For stomachic and nervous complaints, a tea-cupful of chamomile tea every morning, or every other morning, has been recommended to strengthen the stomach ‡. It should be a cold infusion, and the flowers carefully dried in the sun, and not on copper-plates. When occasionally taken this may be of use, But bitters of all kinds seem to possess a narcotic power; and, when taken for a considerable space of time, they destroy the sensibility of the stomach. This is a class of medicines, therefore, that requires much caution, when dyspeptic complaints, arising from weak digestion, are to be treated. A celebrated medicine for the gout, was offered some years ago to the public, under the name of the *Portland Powder*. It was composed chiefly of bitters; and though it was known to alleviate, and even to cure the gout, it was always at the expence of the constitution[*].

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* Buchan's Domestic Medicine, p. 392. I am informed by an intelligent member of the medical profession, that he has found the Pitcaithly waters particularly useful in promoting digestion; favouring the flow of bile, without an adequate quantity of which, digestion cannot go on, whilst headachs and obstructions may be the result.

† Beddoes's Hygëia, vol. ii. p. 75.

‡ It is said that chamomile tea, if allowed to stand any time, becomes deleterious.

Bitters, however, in moderation, may be safely taken; at least that has been found to be the case in France. It is certain, that stomachic complaints, and nervous disorders, are not so common at Paris as in London, where the use of spirituous liquors, and of hot tea, infallibly injures the stomach and the nerves. The wholesome wines, the coolness of the regimen, and the care so strongly recommended by the medical profession in France, to keep the bowels in a tranquil state, also tend to obviate these complaints. But when they do occur, the products of the orange-tree are regarded as the chief specifics. The ladies carefully collect the leaves of the tree, of which they make an infusion. Candied orange-peel likewise, is regarded as a *calmant*, or medicine fitted to tranquillize the system; and the spirit distilled from the flowers, as the only liquor which calms and smooths, instead of agitating the nerves. White wine is forbidden in such cases; but red wine, which is esteemed a corroborant, is allowed[†].

Flatulency, or the production of air in the intestines, is one of the most troublesome circumstances connected with indigestion; but is hardly ever inconvenient to those who avoid sugar, wine, bread, and every thing of vegetable origin, and adhere as strictly as possible to an animal diet[‡]. Any inconvenience of this sort might likewise be prevented, by such a quantity of carbonated alkali, as, on experience, shall be found adequate to the effect[§].

In cases where the stomach has been oppressed by phlegm, an infusion of horse-radish has been found a powerful alterative; and, as such, was strongly recommended by an ancient physician*. This must be owing to the uncommon activity of its volatile salts†.

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[*] Trotter's Essay on Drunkenness, p. 101.

[†] Pinkerton's Recollections of Paris, vol. i. p. 299. In nervous and hypochondriac diseases, so common in Britain, and which the French would often treat as mere indigestions, the use of heating medicines will generally increase the malady, while the blood and nerves should be tranquillized and refreshed by a cooling regimen.- *Pinkerton's Recollections of Paris*, vol. ii. p. [illegible]

[‡] Beddoes's Hygëia, vol. ii. p. 57

[§] Ibid. p. [illegible]

In stomachic and other complaints, the virtues of rue and of saffron, have been much celebrated by Sir William Temple; but they ought to be taken in moderation. He recommends rue as of excellent use, in all those diseases of the stomach, which proceed from cold or moist humours, and as a great digester and restorer of appetite: it is also said to dispel wind, and to promote perspiration. But saffron he extols, as, of all others, the safest and most simple cordial, and the greatest reviver of the heart, and cheerer of the spirits, insomuch that it cannot be of too common use in diet, any more than in medicine. The spirit of saffron, he says, is, of all others, the noblest and most innocent, and yet of the greatest virtue. He has known it restore a man out of the very agonies of death, when left by all physicians as wholly desperate. But the use of this, and all other spirits, ought to be employed only in very urgent cases, lest it should extinguish the natural heat of the stomach‡.

It is proper to observe, that there is no better mode of preserving the stomach in good order, than to keep the feet perfectly clean, washing them daily, or at least very frequently, in tepid, and afterwards, if possible, in cold water.

Heat, also, is of great consequence in promoting digestion; for it has been observed, that the act of digestion has been very much facilitated, and performed in a shorter time if, after a meal, particularly when a person remains sedentary, an additional coat be put on§.

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* See a letter written by *Diocles Carystius*, to Antigonus, one of Alexander's successors, in Paul. Æginet. ad finem. This is one of the most curious remnants of antiquity. In it, Diocles furnishes that monarch with an excellent regimen for preserving his health, in the different seasons of the year; and marks out such symptoms as usually precede approaching disorders, and in what manner they may be most effectually prevented.

† Barry on Digestion, p. 43.

‡ Sir W. Temple on Health and Long Life. Code of Health, 2d edit. vol. iv. p. 354. The Irish usquebaugh is rendered a more powerful remedy for the gout by being mixed with saffron. For indigestion, the following medicine is recommended by the most respectable authority.

℞ Sulphatis Magnesiæ, ℥ iii.
Supertartritis Potassæ, ʒ iii.
Sulphat. Potassæ cum Sulphur. ʒ ii.
M. Include phiala ore amplo bene obturato.
Sig. A large tea spoonful to be dissolved in a glass of warm water, and to be taken early in the morning.

§ Code of Health, 2d edit. vol. ii. App. p. 15.

As indigestion is much more usual with persons advanced in life, than with the young, there is every reason to suppose, that it is greatly owing to chagrin and anxiety; for experience proves, that the cares of life fall heavy upon the digestive organs; the consequences of which must be felt with double force, if, in addition to mental anxiety, improper foods are made use of[*]. When the mind is in any way affected, the food cannot be of too light a nature; nor can any thing be more absurd, than luxurious gratifications in eating, at such a time, though some glasses of exhilarating wine may not be unadvisable.

An author who was much troubled with indigestion adopted the following plan with success.—For common tea, he substituted tea made from orange-peel, a little sweetened to make it palatable, and diluted with milk. Dinner and supper, his only other meals, were confined exclusively to animal food, either boiled or roasted, quite plain, with a little potatoe, to which vegetable he restricted himself for twelve months. His principal difficulty was, in regard to drink. Wine of any kind, and port in particular, turned acid upon his stomach, and *there was the great evil*[†]. He therefore used sparingly, a little mild and sound porter as an aperient, and some spirits and water, generally rum or geneva, but in a small quantity, for fear of over-stimulating. As soon as he found that the stomach could bear it, which was, he thinks, in about two months, he gladly exchanged the spirits and water for a little sherry; and as soon as he found that his stomach could bear port wine, he looked upon himself as quite cured; for this fluid never becomes *heavy* according to the vulgar phrase, that is, *turns acid*, but on a weak stomach. He found that fish was more disposed to turn acid than flesh. He has ever since been free from such attacks, which he in part attributes to keeping the intestinal canal regular, or rather open, not by medicine, but by an aperient regimen, particularly by a moderate use of fruit, in which he can now with safety indulge, and which he considers to be, in that point of view, one of the greatest blessings bestowed on man[‡].

[*] Manual of Health, p. 303.

[†] Acid elixir of vitriol, is said to be a sovereign remedy in cases of this nature.

[‡] It has been found by experience, that the best sort of diet when a person is troubled with costiveness is barley bread, and still better barley-meal porridge, with milk. It is light and easily digested, extremely wholesome, and supposed to be a great antidote to bilious complaints. The flour or meal of pot or pearl barley, would be preferable to any other.

2. The only remaining point to be considered is, what steps ought to be taken, when indigestion proceeds, not from any weakness in the stomach, but from some deficiency in the gastric and other juices, or in some other branch of the great and complicated process of digestion. This, however, is the province of the physician; and these are particulars, regarding which, the sentiments of an intelligent medical friend must be found of the most essential service. In general, however, it is to observed, that the best means of promoting the secretions of the body, and re-establishing its functions, when impaired, is, by moderate exercise, pure air, and serenity of temper; and that occasionally a change of scene, and an excursion to places where amusement is the great object, and the cares of life are for the moment laid aside, has often been productive of the most salutary effects.

CHAP. V.

ON EXERCISE.

THE body of man is evidently calculated for activity and exertion[*]. Nothing can exceed the admirable structure of its form, by means of which it is enabled to move from one place to another, and, by the flexibility of its joints, to bend itself with ease to cultivate that soil from which its food must be derived. *By labour*, (in which general term *exercise* is included), man, 1. Preserves his health; 2. Augments his strength; 3. Improves his mental faculties; 4. Procures the means of his subsistence; and, 5. Obtains all the other conveniences of life.

1. In regard to health, none of the various processes described in the preceding chapter, as connected with the important function of digestion, could be properly or adequately performed, unless the body were stimulated for that purpose, by labour and exertion[†]. It is by exercise, that the digestive secretions are prepared; that the alimentary juices are absorbed, and incorporated with the system[‡]; that the blood is duly circulated, and imbibes the wholesome influences of the atmosphere; that warmth is diffused over the whole; that perspiration is duly promoted; and every noxious substance, however minute, is expelled.

2. Not only is the healthiness of the frame thus preserved,

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[*] "When I consider the physical structure of man," said the great Frederick, "it appears to me, as if nature had formed us, rather to be postillions, than sedentary men of letters." And, without doubt, though this expression be strong, it is not without some foundation.—*Hufeland's Art of Prolonging Life*, vol. ii. p. 206.

[†] So much convinced was the celebrated Cyrus, that exercise was essential to health, that he established it as a rule among the Persians, to whose education and health he paid such particular attention, "that they should never eat but after labour."

[‡] The health of all the parts, and the soundness of their structure, depend on perpetual absorption, and perpetual renovation; and exercise, by promoting at once absorption and secretion, promotes life, without hurrying it; renovates all the parts and organs, and preserves them apt and fit for every office they have to perform.

but it acquires that strength, which is so essential for enabling it to perform the toils which it must undergo. Hence it is, that those persons who cultivate the ground, are not only the healthiest, but, in general, the strongest individuals in the community. Besides the beneficial effects of labour or exercise on the whole frame, it is also a singular and important circumstance, which well merits to be attended to, that those particular parts of the body, which are most used, however weakly they were before, yet become, in process of time, thick, strong, and fit to perform the labour required of them[*].

3. The effects of exercise upon the faculties of the mind, are also of the highest importance. It keeps the understanding clear, the imagination untroubled, and the spirits in a state fit for the proper exertion of our intellectual powers. It is to indolence, on the other hand, that we must ascribe the spleen, which is so frequent in men of studious and sedentary habits; as well as the vapours, to which those of the other sex are so often subject[†].

4. When a number of men are collected within a narrow compass, the labour of a large proportion of every community must be employed in raising food for themselves, and those connected with them; and where the assistance of domesticated animals is made use of, food for them must likewise be provided, partly by human labour. Indeed the examples are rare, where men can provide themselves, at all seasons of the year, with a sufficient quantity of food, unless by means of some laborious employment, as hunting, fishing, gardening, or agriculture. Without exertion, therefore, of one description or another, no great community could be supplied with the means of subsistence.

5. It is by labour, likewise, that all the various conveniences of life must be obtained. Providence furnishes materials, but expects that we should work them up ourselves, by the toil of our hands, and the sweat of our brows. The earth must be cultivated, before it gives its increase; but even when that is accomplished, through how many hands must its products pass, before they are rendered fit for use[‡]! Hence arise the occupations connected with manufactures

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[*] Cheyne's Essays on Health, p. 96.

[†] See the Spectator, No. 115, written by Addison. Plin. Sec. Epist. 1. § 6, justly remarks, Mirum est, ut animus, agitatione motuque corporis, excitatur.

[‡] The Spectator, No. 115.

and commerce, in which such multitudes of individuals are necessarily and usefully employed*.

But when society is brought to perfection, it is only requisite for a part of the community to labour, in order to provide the whole with the necessaries and the conveniences of life; and the remaining members may devote themselves to occupations of a sedentary or literary nature, where no personal exertion is required. The health of every individual, however, placed in such a situation, would materially suffer, and they would soon become more unhealthy, and consequently more miserable, than the rest of mankind, unless they resolved to undergo that species of *voluntary labour*, which is generally accompanied with some degree of pleasure, as well as toil, and which goes by the name of EXERCISE.

We shall now proceed briefly to explain, 1. The various sorts of exercise; 2. Its advantages in preventing or curing disease; and, 3. The rules to be observed regarding it, according to time, place, quantity, age, sickness, and various miscellaneous particulars.

SECT. I. *Of the various Sorts of Exercise.*

EXERCISES are usually divided into three sorts, the active, the passive, and the mixed. In the following discussion, however, it is proposed to arrange them into four classes. 1. The youthful; 2. The manly; 3. The gymnastic; and, 4. The healthful and amusing;—it being impossible to make the usual arrangement satisfactory†.

1. *Youthful Exercises.*

The great objects of exercise during infancy and youth, are, to promote the growth, and strength of the body, and to render the senses, both external and internal, more acute. The plays and diversions of children, therefore, as Locke has well observed, should be directed towards good and useful habits, and to prevent the introduction of bad ones. Nature has implanted in young persons, an earnest desire to romp, to run, to wrestle, and to follow other bodily exercises that require activity; so that sitting, or being confined, is the greatest punishment they can suffer. This is a wise contrivance of nature; for thereby their joints are rendered strong and pliable.

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* By labour and exercise also, we secure a sound repose at night, the advantages of which need not be here dwelt upon, as they will be explained in the subsequent chapter. Lord Bacon sums up the benefits arising from exercise, in the following words.—*First*, That it sendeth nourishment into the parts more forcibly. *Secondly*, That it helpeth to excern by sweat, and so maketh the parts assimilate the more perfectly. *Thirdly*, That it maketh the substance of the body more solid and compact; and less apt to be consumed and depredated by the spirits.

† Thus, using a carriage is called a passive exercise; but driving a phaeton is an active one. Friction is said to be a passive exercise; but many use their own flesh-brush, and thus render it active.

Exercise is much more necessary for children, than attention to the mental branches of education. It is astonishing how many perish by what Salzmann calls "*the disease of education.*" Multitudes die every year of that disorder. It is an article which ought to make a too conspicuous figure in our bills of mortality*.

According to Rousseau, the grand secret of education is, to contrive that the exercise of the body, and that of the mind, may always serve as relaxation to each other.

The exercises of youth should promote the circulation of the blood, and strengthen the nerves and muscles; they should expose the body to the weather and the elements, and should render it adroit and agile; they should exalt the courage, inspire presence of mind, and excite and cherish activity; and by them, not only personal strength, and mental energy, but also the beauty of the form, should be promoted†.

The various sorts of youthful exercise, may be considered under the following heads: 1. Infantine or childish exercises; 2. Hopping; 3. Running; 4. Hooping; 5. Throwing; 6. Lifting and carrying; 7. Balancing; 8. Climbing; 9. Skipping; 10. Sliding; 11. Skating; 12. Swinging; 13. Bell-ringing; 14. Fiving; and, 15. Dancing‡.

1. *Infantine and Childish Exercises.*—Many of the pastimes and exercises to be mentioned in the following pages, as belonging to youth, and even manhood, are copied by

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* Beddoes's Essay on Consumption, p. 122.

† Salzmann's Gymnastics for Youth, p. 187. This author observes, that, by that forcible respiration which exercise induces, straitness of chest, which is so injurious to the lungs, may be prevented.

‡ The greater part of the following observations, regarding the different sorts of exercise, are extracted from Salzmann's Gymnastics for Youth, and Strutt's Account of the Sports and Pastimes of the People of England, printed in one volume, quarto, 1801.

the younger part of the community, and in some degree become the sports of children. Thus, instead of riding, children are mounted on wooden horses, or substitute a stick for a horse, and endeavour to imitate the galloping and prancing of that noble animal. Flying a kite, whipping a top, and playing at marbles, as a substitute for bowls, are exercises to which children are naturally inclined[*].

2. *Hopping.*—Hopping on one leg, though a very simple exercise, ranks amongst the most violent; but it is a very useful one, and serves particularly to strengthen the lower limbs: it ought, however, to be established as a general rule, that after one leg has been exercised, the other must take its turn. In England, it was not unusual, in the sixteenth century, to have *hopping matches*, and to give prizes to those who distinguished themselves in that species of exercise.

3. *Running.*—Among the means which nature has bestowed on terrestrial animals for the preservation of life, running is the most important; and the body of no animal seems better formed for that exercise than that of man. Perhaps there is no surer means of strengthening the lungs of those who are short-winded, than by gradually habituating themselves to this exercise; and nothing can be more absurd than to prevent children from acquiring a faculty, innocent in itself, and in many respects so useful[†]. Running was formerly considered as an essential part of the education of a young man of rank[‡]; and it is certainly well calculated for the young and active in general; but it ought to be gradually increased, and never carried to excess[§].

4. *Hooping.*—Driving or trundling a hoop, with a short stick, so as to keep it in motion, without suffering it to fall, is a pleasant incentive to running, and well adapted for spacious level grounds. This is a classical exercise, and was as

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[*] Strutt's Sports and Pastimes, book iv. chap. 4.

[†] Running up and down stairs, is an active and useful exercise; it is recommended by Swift. It is hardly to be credited how healthy it is, and how expert young people become at it by practice.

[‡] There was a game, formerly much practised in some parts of England, called *base* or *bars*, and sometimes *prisoner's bars*, where the success of the pastime depended much upon the agility of the candidates, and their skill in running. Strutt has described this pastime; but it is too long and complicated to be inserted in this work.—See Strutt, p. 61.

[§] Turnbull's Medical Works, p. 120. Running, by shaking the bowels is nearly as beneficial as riding, but a more violent exercise.

common with the Greeks and Romans, as it now is in many modern nations.

5. *Throwing.*—All the different branches of jaculation, are useful exercises for young people. They strengthen the hand, the arm, the shoulder, and the pectoral muscles; and when they are combined with aiming at a mark, it exercises the eye, in forming a judgment of distances, in a very effectual and amusing manner.

6. *Lifting and Carrying.*—These are exercises which require great prudence and caution, if attempted by young people, lest their soft and tender frames may be injured. Lifting a weight with extended arms, fixed on a long staff, with notches at regular intervals, is, however, recommended by Salzmann. He also observes, that young persons with high shoulders and short necks, may have those defects in some measure corrected, by carrying in their hands burdens of more or less weight, for a certain time every day, with their arms hanging down.

7. *Balancing.*—If we endeavour to preserve the equilibrium of our own bodies, or to balance with our hand any thing that is continually in danger of falling, we shall find prompt, judicious, adroit movements, and bendings of the body, necessary. By practising these arts, presence of mind, and justness of eye, are essentially promoted.

8. *Climbing.*—To strengthen the body, to fortify the courage, and to increase the truly useful capacity for escaping from various dangers, climbing is one of the most advantageous exercises in which boys can be instructed; and is indispensibly necessary for seamen*. The climbing of trees and walls greatly tends to promote bodily agility; and youth are thus familiarized with various dangers, not always to be avoided in common life.

9. *Skipping.*—It is frequently advantageous to have obstacles to surmount, in performing things that are in themselves easy; thus, skipping with a rope or hoop, is nothing more than running and leaping with additional obstacles†; but by this means we promote expertness, firmness of action, and presence of mind, which are objects of no small

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* It is said, that a quack in London got a great deal of money, by persuading many people that he could cure them of the gout *by exercise;* and the exercise which he compelled them to try, was nothing but climbing up a ladder, and getting down again.

† Skipping with a hoop resembles skipping with a short rope, only using a hoop in its stead. This exercise tends to render boys active; but, in this country, it is more usually exhibited by rope-dancers, than included among youthful exercises.

gymnastic diversions and exercises to be afterwards described, are now so little practised. Such pastimes make people take more exercise than they would otherwise do, and are of the greatest service to those who are not under the necessity of labouring for their bread. As active diversions lose ground, those of a sedentary kind seem to prevail. Sedentary diversions are of no other use but to consume time. Instead of relieving the mind, they often require more thought than either study or business. Every thing that induces people to sit still, unless it be some necessary employment, ought to be avoided*.

3. *Gymnastic Exercises.*

Gymnastic exercises were originally considered in a military point of view alone; but philosophers and physicians soon perceived, how conducive they were to health and strength; how many ailments vanished in the midst of those various and complicated movements which they rendered necessary, and what energy these motions imparted to the most important functions of the body. They observed, that even convalescents, by adjusting the use of these exercises to their respective degrees of strength, recovered expeditiously, even from a long and painful train of maladies. Hence the gymnastic art became an object of public attention, as an important branch in the education of youth, and as materially contributing to the preservation and to the perfection of the human race†.

Herodicus, who instructed Hippocrates himself in the art of physic, being master, we are told, of one of the *Grecian palæstræ*, or *gymnasia*, observed that the youths under his care, who took their proper exercises, were in general very healthy and strong; he thence began to impute it to their constant exercising. Indulging this thought, he began to establish these exercises as a means of preserving or recovering health, and formed certain rules for that purpose, which have been lost for many ages. They were once, however, in great esteem; and Herodicus is to be accounted, if not the inventor, at least the first great improver of so useful an art‡.

The ancients, in general, had so high an opinion of gymnastics, that Plato and Aristotle, and other great authoriing the body, and may always be taken in such moderation, as neither to overheat nor fatigue. It has, in that respect, the preference over cricket, tennis, or any other of those games, which cannot be played without violence.

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* Buchan's Domestic Medicine, 79.

† Hygiène, by Hallé. See Code of Health, 2d edit. vol. iii. p. 290.

‡ Burton's Treatise on the Non-naturals, p. 245.

4. *The Shinty.*—This is another favourite Scotch game, but of a nature more active and violent than the golf. It is played with a crooked club, and with a ball of wood, which is driven from one boundary to another, by opposing parties, who struggle with all their might to drive the ball to the boundary, which their opponents are obliged to protect. Formerly parishes or smaller districts contended with each other, but it is now principally confined to youth. There is a similar game in England, known under the name of *hockey.*

5. *Swimming.*—When bathing is accompanied by the exercise of swimming, it is doubly useful. The power of swimming is a natural and useful faculty bestowed upon every animal, because all animals are perpetually exposed to the danger of falling into an element so generally abundant; and nothing but terror, and a want of practice, prevents its being universal among the human species. Swimming is highly favourable to activity, as well as cleanliness; and, by learning that art, a person may not only often save his own life, but may be the means of rescuing a fellow creature, perhaps a near relation or friend, from a watery grave. The Athenians considered this art of such importance, that when they wished to express a contemptuous idea of the knowledge of any one, they said, that he could neither read nor swim[*].

Swimming in salt water, is particularly to be recommended, being not only of use as an exercise, but as being the means of preventing or curing various disorders[†].

6. *Rowing.*—This exercise strengthens the arms, and the

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tion to this mode of exercise, a singular plan has been adopted, that of purchasing a silver club, which is to be played for annually, and is to remain for one year in the possession of the victor; but he is obliged to append a medal to it, when he restores it to the company.

[*] The reproach in Latin was, '*nec literas didicit, nec natare.*' See Locke's Treatise on Education, § 8; and Salzmann's Gymnastics for Youth, p. 339. Dr. Franklin has written an essay upon the art of swimming, which, he says, is one of the most healthy and agreeable exercises in the world. After having swam for an hour or two in the evening, he asserts, that one sleeps coolly through the whole night, even during the most ardent heat of summer. In regard to swimming, he adds a singular suggestion, that of aiding the swimmer by a paper kite, by means of which, he does not think it impossible to cross from Dover to Calais; though he admits that a packet boat is preferable.

[†] Locke's Treatise on Education, § 8.

upper parts of the body, and is good for the lungs. Both the Britons and Saxons were expert in the management of the oar, and thought it by no means derogatory for a nobleman of the highest rank to row or steer a boat with dexterity and judgment[*]. Rowing is so healthy an exercise, that the watermen on the Thames, though so much exposed to wet and cold, yet hardly ever have the rheumatism. If their employment had been solely on salt water, it would not have been so remarkable a circumstance.

7. *Angling.*—This, though not a very active, yet on the whole, is a healthy exercise. It amuses the mind, and gently exercises the body; and, above all, is useful to the lungs, as the air above running streams is always of the purest sort. It is remarked, that those who are employed in catching salmon in rivers, are remarkably healthy.

8. *Hunting.*—Of all the rural exercises, hunting is the most ancient, and originally was attended to in this, and in other countries, more as a means of procuring food, than of pleasure or exercise[†]. It is a misfortune, however, attending hunting, and other exercises of that sort, that such as practise them, often dedicate themselves entirely to those recreations, as if they were a trade, and can think of nothing else. This may do very well for a gamekeeper or a huntsman; but it is a disgrace to persons who probably have received some education, and whose rank and property give them other duties to perform, to be totally absorbed in such recreations[‡].

9. *Gardening.*—Some branches of gardening require so much exertion as to be solely calculated for the strong and healthy, who derive much benefit from the salubrious exhalations of the fresh opened earth, and even the aged and the sickly, who are unable to dig the ground, may find means of employing themselves in a garden, in pruning fruit-trees, and may thus obtain a healthy exercise, without much labour[§].

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[*] Strutt's Sports and Pastimes, p. 69.

[†] A celebrated poet, (Dryden), seems to consider this as the best, at least the healthiest mode of obtaining subsistence. He observes,

> By chase our long-liv'd fathers earn'd their food,
> Toil strung their nerves, and purify'd their blood;
> But we, their sons, a pamper'd race of men,
> Are dwindled down to threescore years and ten.
> Better to hunt in fields, for health unbought,
> Than fee the doctor for a nauseous draught.

[‡] Hart's Diet of the Diseased, p. 215.

[§] Salzmann makes the following observations regarding the the propriety deemed to be of such importance, that the victorious athlete received the applause of the whole nation; and a breach was made in the walls of his native town, to introduce him in triumph[*]. It was formerly much practised in England; and the young nobility and gentry were regularly bred to it. In the ages of chivalry also, to wrestle well, was accounted one of the accomplishments which a warrior ought to possess[†].

6. *Boxing.*—The art of boxing was much cultivated among the ancient Greeks; but the mode adopted at the Olympic games, was of a very serious, and indeed shocking nature. The combatants did not make use of their fists alone, but had their hands surrounded with thongs of leather, (the *cestus*), which were often filled with plummets of lead or iron, in order to add force to the blow. Armed in this manner, the combatants often killed each other, or were desperately mutilated[‡].

This art has, at different times, been much practised in England, according as it was sanctioned or reprobated by the fashion, or prejudices of the moment. Public exhibitions of boxing, without which it probably might fall into disuse, are certainly attended with some inconveniences; but, on the whole, they have their advantages. They certainly keep up a bold and manly spirit, not only amongst those who are trained for that purpose, but even among the

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over with oil, or some unctuous matter, and afterwards sprinkled with dust or sand. The victory was adjudged to him who gave his adversary three falls; or who compelled his opponent to yield the contest, when both were thrown upon the ground, by squeezing or breaking his fingers, &c.; this was called *Pancration.*

[*] Salzmann's Gymnastics for Youth, p. 247.

[†] In the Code of Health, 2d edit. vol. ii. App. p. 163, there is an account of a curious book on wrestling, written by Sir Thomas Parkyns, Bart. in which he describes the qualifications of wrestlers in the following terms: They must be of a middle size, athletic, full-breasted, and broad shouldered, for wind and strength; brawny legged and armed, yet clean limbed. Terence's man, that has "*Corpus solidum atq. succi plenum,*" is my promising scholar, to do me credit, and be capable to serve his king and country on occasion, and defend his friend and self from insults.

[‡] It appears, indeed, from the following epigram of Lucilius, that the consequences of these battles were sometimes very terrible, though the combatants escaped with their lives and limbs.

On a Conqueror in the Cestus.

This victor, glorious in his *olive* wreath,
Had once *eyes*, *eyebrows*, *nose*, and *ears*, and *teeth*;
But turning *cestus champion*, to his cost,
These, and still worse, his heritage he lost:
For by his brother sued, disown'd, at last
Confronted with his picture, he was cast.

spectators, who, seeing what their countrymen can bear without flinching, must aspire to similar strength of person, or at least firmness of mind.

7. *Cudgelling.*—Instead of contending with the fist, some prefer fighting with sticks or cudgels: And the quarter-staff, or single-stick, as it was sometimes called, was formerly much used in England, more especially in the western parts of the kingdom. A native of Devonshire, with an English quarter-staff, is said to have fought three Spaniards with their swords and poniards[*].

8. *Fencing.*—There is no exercise, with a view to health, better entitled to the attention of those who are placed among the higher classes of society, than that of fencing. The positions of the body in fencing, have, for their objects, erectness, firmness, and balance; and in practising that art, the chest, the neck, and the shoulders, are placed in positions the most beneficial to health. The various motions, also, of the arms and limbs, whilst the body maintains its erect position, enable the muscles in general to acquire both strength and tone; and in young people, the bones of the chest or thorax necessarily become more enlarged, by means of which a consumptive tendency may be avoided. Various instances may be adduced, where fencing has prevented consumptions, and other disorders. It has been remarked also, that those who practise this art are, in general, remarkable for long life, and for the good health they have enjoyed[†].

9. *Archery.*—Among the various military arts formerly practised in this kingdom, there was none that was carried to a greater degree of perfection than that of archery. The English of old used the bow for a double purpose. In time of war, it was a dreadful instrument of destruction, in

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[*] Strutt's Sports and Pastimes, p. 198.

[†] See a very intelligent letter regarding fencing, by Henry Angelo, Esq. of Bolton row, May-fair, London. Code of Health, 2d edit. vol. ii. Appendix, p. 165. Locke has the following observations on this subject.—Fencing is a good exercise for health, but dangerous to the life; those who have learned to use their swords, being apt to engage in quarrels, on the confidence they have in their own skill. This presumption makes them often more touchy than they ought to be, regarding points of honour, and fiery and violent on receiving slight or imaginary provocations; and young men are too apt to imagine, that they have in vain learned to fence, if they have never shown their skill and courage in a duel. Notwithstanding, however, these objections, fencing is considered to be so necessary a qualification in the breeding of a gentleman, and has so many advantages in regard to health, and personal appearance, that every gentleman of rank and property, ought to have so striking a mark of distinction.—*Locke's Treatise on Education*, § 109.

which they particularly excelled; and many victories were obtained by the strength and dexterity of their archers. In time of peace, it was a means of obtaining game, and an object of exercise and amusement*. It may still be recommended as an exercise, which occupies the time, exercises the faculties, and fortifies the health of those who apply to it; and in one respect is particularly advantageous, being taken in the open air.

10. *Military Exercises.*—In the ages of chivalry, martial exercises were in the highest repute; and the young nobility and gentry were trained, under skilful masters, in running, in wrestling, in shooting with the bow, in playing with the sword, in using the pole-axe, in carrying heavy armour, in trying the speed of horses, and in other exercises of a similar nature. It may be proper to add, that the advantages to be derived from military exercises, with a view to health, have been sufficiently proved by the beneficial effects which many experienced from them, when the volunteer spirit was at its height, in this country; and such numbers of persons, unaccustomed to the use of arms, were regularly trained and disciplined. The exercise thus obtained, was of infinite service to those among the lower ranks, who were employed in sedentary occupations; and, in regard to the upper orders of society, it certainly was the means of warding off many chronic disorders.

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On the whole, it can hardly be doubted, that the sports and diversions of a people may be turned to the advantage of the public; and that a wise and prudent government, may excite in the husbandman, the manufacturer, and the mechanic, as well as in the sailor and soldier, and persons in the higher ranks and professions of society, such an emulation, as may tend, not only to the preservation of health, but to promote agriculture and industry, to encourage trade, to improve the wisdom and knowledge of mankind, and to render a country happy in peace, and victorious in war†.

6. *Healthful Exercises.*

The exercises taken for the purposes of health, are either *external*, as, 1. Walking; 2. Riding; 3. Gestation; 4. Sailing; 5. Bowling:—Or *domestic*, as, 1. Billiards; 2. Shuttle-cock; 3. Dumb-bells; 4. Pensile-beds; 5. Declaiming; 6. Friction; 7. Electricity; and, 8. Galvanism.

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* Strutt's Sports and Pastimes, p. 38.

† See West's Dissertation on the Olympic Games, p. 206.

External Healthful Exercises.

1. *Walking.*—There is no exercise more natural to us, or in every respect more conducive to health, than walking. It is the most perfect in which the human body can be employed; for by it, every limb is put in motion, and the circulation of the blood is effectually carried on, throughout the minutest veins and arteries of the system [*]. This salutary and most excellent exercise is in the power of every body, and can be adapted, in degree and duration, to the various circumstances and wishes of each individual [†].

Walking is of two sorts, either on plain ground, or where there are ascents. The latter is in every respect greatly preferable, as by it the lungs are exercised, and the ascent and descent agitates the body, unless it be in a weak state, with an useful variety. *Celsus* also contends, that a straight walk is better than a winding one [‡]; but surely the latter is more amusing. Walking against a high wind is very severe exercise, and not to be recommended.

As, from various circumstances, persons residing in large towns, and engaged in sedentary occupations, cannot take all that exercise abroad, that may be necessary for their health; they ought, as much as possible, to accustom themselves to be walking about, even in their own houses, instead of sitting so much at desks and tables, as is usually the case. This rule is peculiarly necessary to be attended to by literary men; and though such practice does not make up for the want of exercise abroad, yet it is the best substitute for it.

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[*] The following rules are recommended to the attention of those who are attached to this excellent species of exercise. 1. The most proper walk, for health, is in a pure and dry air, and in rather an elevated situation, avoiding marshy and damp plains. 2. In the summer season, the walk to be taken either in the morning or evening, but by no means during the middle of the day, unless guarded from the oppressive heat of the sun, under the shades of woods or forests; in winter, the best period of the day is usually after breakfast, or from ten to twelve. To read during a walk is an improper custom, highly detrimental to the eyes, and destroys almost all the good effects that can be derived from the exercise. 3. It is advisable, occasionally to change the place where you walk; for the same place, constantly gone over, may excite as many disagreeable, and unpleasant sensations as the closet or the study. 4. We ought to accustom ourselves to a steady and regular, but not to a quick pace. 5. An agreeable companion contributes much to serenity of mind; but unless the mode of walk is similar, as well as the taste and character congenial, it is better to walk alone; as either the one or the other of the two companions must be subjected to some constraint. —*Willich's Lectures on Diet and Regimen*, p. 447.

[†] To the delicate and invalid, carriage exercise is preferable; horse-exercise to the more hardy; but foot-exercise is most convenient, for many reasons. For small is the proportion of mankind, who can afford to use either a carriage or a horse.—*Adair's Essay on Diet and Regimen*, p. 62.—Both the body and the mind are enlivened by walking; and even when carried to an extreme, it has often been found highly serviceable in nervous diseases.—*[illegible]'s Medical Works*, p. 120.

[‡] See Grieve's Celsus, Book I. Ch. 2. p. 25.

It was an old rule, '*after dinner to sit a while, and after supper to walk a mile;*' but that adage is not consistent with the hours kept in modern times. When supper, however, was very early, those who resided in the country might have the advantage of walking two or three miles previous to their going to bed. It is said, that such a walk brought on a gentle breathing sweat, which was favourable to repose; and that next morning, they awoke with a clear head, and found a refreshment from their sleep, of which the indolent have no idea.

2. *Riding.*—No exercise has been more celebrated, as healthy in itself, and more especially, as useful to invalids, than *riding on horseback;* and in general, it may be laid down as a rule, sanctioned by experience, '*that riding is the best exercise for regaining health, and walking for retaining it.*' Riding certainly strengthens, in a most effectual manner, the stomach and intestines; and to the hypochondriac, it is an inestimable remedy*. It is less tiresome and laborious to the inferior limbs than walking, so that persons in a weak state of health can use it with less pain or difficulty; at the same time, it must be admitted, that the legs and feet are apt to get stiff and cold by riding, unless some exercise on foot be afterwards taken.

To those whose business does not permit them to devote much of their time to exercise, riding is certainly preferable, more especially in cities, as on horseback they are at once brought out into the fresh air, and the body is so thoroughly agitated, that it does not require to be so long continued as some other exercises; an hour, in general, being sufficient†.

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* The various changes of the air, through which we so quickly pass when riding on horseback, become, as it were, a new air bath, by which the fibres are strengthened; and the various new scenes and objects we are constantly observing, tend to amuse the mind.—*Lynch's Guide to Health*, p. 288.

† Willich's Lectures on Diet and Regimen, p. 456.

The exercise of riding was not so much recommended by the ancient physicians; because horses were not then so common as they now are; and because they had not then the same conveniences for riding that we have. In those days they rode without stirrups, which must have been extremely disagreeable and fatiguing to weak persons; and hence, only healthy and strong men could take that species of exercise*. Even the modern Italians are so little addicted to horsemanship, that one of their proverbs is, '*a galloping horse is an open sepulchre*†.'

The following miscellaneous observations regarding riding, are submitted to the consideration of those who are fond of this useful exercise.

1. Riding is certainly suitable to the healthy and the active; but it ought not to be much indulged in, until the bodily powers are more than half developed. If a youth is not remarkably strong and active, or has not a horse of an inferior size at command, he ought not to be permitted to ride much before twelve years of age. 2. Every constitution cannot equally bear to ride, much less in the most rapid manner. It is the more necessary to be particular on this head, because rough exercise is the darling idol of the English; and youth, fired by examples from the Greek and Roman games, are apt to engage too far in manly sports, not promiscuously beneficial to all‡. 3. Sanctorius says, that the amble is the most wholesome, and the trot the least so, of all the different riding paces. This can only be the case, however, where the body is weak; for, where the constitution is strong, the more forcibly the body is shaken, the better. 4. In violent exercises, particularly that of riding on horseback, much advantage will be derived, from supporting the bowels by a broad belt, the pressure of which must be regulated by circumstances§. 5. In severe weather, old people will find it necessary to ride under shelter; and at all times they ought to avoid damp and bleak places. 6. Dr. Beddoes strongly recommends to invalids, the greatest attention to keep the feet from chill when on horseback. He therefore suggests the propriety of having a foot warmer,

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* Fuller's Medicina Gymnastica, p. 231.

† Fuller's Medicina Gymnastica, p. 234. They consider galloping to be so desperate an achievement, that, at their races, the horses have no riders, lest their tumbling off should destroy the pleasure of the entertainment.

‡ Collingnon's Inquiry into the Structure of the Human Body, p. 19.

§ Turnbull's Medical Works, p. 121.

water-bottle, or some such expedient, as a palliative, until the constitution will supply heat enough for itself[*]. 7. Riding is of use to those who are troubled with the gravel, at least in a slight degree; but it will not answer where there is a confirmed stone. 8. When the spirits are broken down by grief and mental disorders, riding will give a greater alacrity to the spirits than even wine itself[†].

3. *Gestation.*—Conveyance in carriages is of various sorts; as in a coach or close carriage, in an open carriage, or in a sedan chair. These elegant pieces of luxury have become so common, that the inhabitants of great towns seem to be in some danger of losing the use of their limbs altogether, from never stirring abroad but in one or other of these vehicles[‡]. It is a fashion, to consider it beneath any one's dignity to walk, who can afford to be carried; and many sacrifice their health, to show that they have a carriage, and to gratify their vanity, in compliance with a ridiculous custom[§].

Conveyance in a carriage, is an useful exercise to invalids, or persons who are on the decline, who cannot bear more violent motion; but the springs of the carriage ought not to be too nicely suspended; and at least one of the windows ought to be kept open, that the perspiration and breath of several persons, enclosed in so narrow a space, may not too much vitiate the air[‖].

Using an open carriage is the most healthy fashion that has been introduced in modern times, and is, in some respects, comparable to riding; but in sultry weather it should not be too rapidly driven; for though it is pleasant, on account of the agreeable current of the air, yet it is dangerous to persons subject to violent perspiration. There is reason to believe, that, by the use of open carriages, people of rank will, in time, become much healthier, and more hardy, than formerly.

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[*] Manual of Health, p. 230.

[†] See the Best Method of Preserving Health, p. 143.

[‡] Lolling in a carriage, unless a person is too weak to bear any other motion, only serves to destroy the benefit of a more effectual, and even more pleasant exercise of the limbs.—*Institutes of Health*, p. 22.

[§] Buchan's Domestic Medicine, p. 77.

[‖] "But we abound in absurdity and inconsistency. Thus, though it is generally agreed, that *taking the air* is a good thing, yet what caution against air! what stopping of crevices! what wrapping up in warm clothes! what shutting of doors and windows, even in the midst of summer! Many London families go out once a-day to take the air, three or four persons in a coach, one perhaps sick; these go three or four miles, or as many turns in Hyde Park, with the glasses both up, all breathing over and over again the same air they brought out of town with them in the coach, with the least change possible, and rendered worse and worse every moment; and this they call *taking the air!*"—*Dr. Franklin's Letter to Dr. Percival.*

Driving carriages is certainly an active and healthy exercise; but unless a person is taught young, he generally does it in a very awkward manner; and to learn it late in life, requires rather more time than can well be spared for the acquisition of such an accomplishment.

In regard to exercise in sedan chairs, it is well calculated for the weak and delicate, and to those who are deprived of the use of their limbs; but it cannot be of any general utility.

4. *Sailing.*—There are few exercises which, in a maritime country, deserve more attention and inquiry, than sailing, more especially as it furnishes so effectual a cure for various disorders[*]. But its advantages in that, and in other respects, shall be fully discussed, when the subject of a change of residence is explained. (See Part II. Chap. III.)

5. *Bowling.*—This exercise may be traced in England as far back as the thirteenth century, but is probably of a more ancient date. Bowling-greens are said to have originated in England, and were to be found in most country towns of any note; indeed country mansions were formerly not reckoned complete without them[†]. It is an unfortunate circumstance, that this mode of exercise is so much given up, as it is both healthy and amusing; and, being taken in the open air, was infinitely preferable to any domestic exercise.

Domestic healthful Exercises.

1. *Billiards.*—Domestic exercises ought only to be engaged in when the season is unfavourable, exercise in the open air being much more beneficial. At the same time, when the weather will not permit going abroad, they may

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[*] Sailing is a passive exercise, well suited to a state of disease, especially where the stomach and lungs are affected. It produces, at first, much sickness and nausea, and occasions the stomach and adjacent organs to be completely unloaded: bilious complaints, therefore, are removed by it: and by its producing an increased discharge by the skin, it is no less useful in consumption and spitting of blood, by thus lessening the determination to the lungs.—*Turnbull's Medical Works*, p 12.

[†] Strutt's Plays and Pastimes, p. 199. In towns, open greens for bowling being exceptionable, from the difficulty of excluding improper company, and from their being exposed to the inclemency of the weather, covered bowling alleys were invented; but they were abolished, as promoting a pernicious spirit of gamblin g.

be followed with some advantage, and are certainly to be preferred to mere idleness, or sitting from morning till night in close apartments, doing nothing*. Of these, the game of billiards is, in general, a peculiar favourite. The invention of this game is attributed to the French. It is an elegant species of amusement; admits of great variety; and requires a great deal of skill to be thoroughly master of it. It is also attended with a moderate degree of exercise; but it deserves little to be encouraged, on one account, that it is very apt to promote a gambling spirit among those who are addicted to it.

2. *The Shuttle-cock.*—This is a sport that has been long practised, being represented in a manuscript as far back as the fourteenth century. It afterwards became a fashionable pastime among grown persons in the reign of James I.† In a medical point of view, this exercise is peculiarly beneficial to such invalids as have sufficient strength to play at it; for by the various exertions of the muscles of the limbs, and of the trunk of the body, and the alternate compression and relaxation of the blood-vessels and secretory organs, the circulation is promoted, the excretions, especially perspiration, are increased, the relaxed fibres strengthened, and the nervous system invigorated‡.

3. *Swing-leads*, or *Dumb-bells.*—A quantity of lead is sometimes formed into a shape, by which it can be grasped by the hands, for the purpose of being swung about. Articles of that sort, are known under the name of *swing-leads* or *dumb-bells*. These are mentioned as a mode of exercise,

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* Cheyne's Essays on Health and Long Life, p. 95; and Burton on the Non-naturals, p. 258.

† Strutt's Sports and Pastimes, p. 227.

‡ Adair's Medical Cautions, p. 409. However trifling this exercise may appear to some people, yet, with the exception that it is not performed in the open air, there is hardly any that ought to be accounted superior to it. It has this advantage, that it may be used at all times, and in any room eighteen feet long; the height is not material, because good players never play high; and with a little practice, indifferent ones will be able to do the same. I have the more pleasure in recommending this exercise, as it is so well calculated for women, who cannot, with propriety, at all times, use so much labour as is necessary to keep them healthy. With the advantages of its being a social diversion, it most agreeably exercises the whole human frame, by the various attitudes the players are perpetually putting themselves in; of course, it creates a graceful pliancy in the joints and muscles, accelerates the circulation of the blood, and propels, to the cutaneous pores, all the fluids prepared by nature to pass off by this easy and salutary way; it also promotes the concoctive powers; and, if used before dinner, will admit of a considerable share of exertion, without any danger, if care is taken not to drink any thing cold at the time, or imprudently expose the body to a cold air.—*Smith's Letter to Dr. Cadogan*, p. 64.

by an author who wrote in the time of Queen Elizabeth; and a pastime, of a nature somewhat similar, is recommended, in one of the Numbers of the Spectator, as excellent for opening the chest, exercising the limbs, and giving a man all the pleasure of boxing without the blows*. As commonly used, dumb-bells are certainly a partial exercise; but by frequently altering the posture of the body, and taking the exercise with open windows, it is found highly beneficial. The late Dr. Adair has strongly recommended what he calls '*the lead exercise*,' which is performed in the following manner. Procure two pieces of lead, from between half a pound to a pound weight each, according to the strength of the arms, either in the form of a bullet, or oblong, like a rolling-pin. If the lead is uncomfortably cold, it may be covered with cloth. When used, the person is to stand upright, with his toes a little turned out; raise the leads nearly close to each other, opposite to the pit of the stomach, bending the knees at the same time; then thrust the arms down smartly, as far as they will go without stooping, and straighten the knees at the same instant, and thus continue these opposite motions, alternately, and quickly, until the arms feel slight[illegible] fatigued, and repeat it three or four times a day, especi[illegible] before breakfast, dinner, and going to bed†.

4. *Suspended Beds.*—The celebrated Asclepiades, [illegible] number of new improvements in medicine, if he di[illegible] effect more cures than other physicians, at least ke[illegible] longer the hopes and spirits of his patients. Amo[illegible] other inventions, none was more approved of at t[illegible] than the *lecti pensiles*, or suspended beds, by [illegible] which, the patient might be moved to and fro, so a[illegible] him some kind of exercise‡; or, if it were nece[illegible] might be rocked to sleep. These sorts of beds [illegible] fashionable at that time, that they were made [illegible] ver, and became a very important article in the [illegible] the luxurious.

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* Strutt's Sports and Pastimes, p. 60.

† Adair's Essay on Diet and Regimen, p. 64. [illegible] The Doctor [illegible] at great length on the advantages of this exercise [illegible]; and it [illegible] an improvement on swing-leads or dumb-bells. Such dom[illegible] exercise, always ready at hand, must be of service to those [illegible] pressure of business, cannot go abroad to take the [illegible] the neces[illegible] doors; also to sedentary people, who will not take the [illegible] to go out; and to valetudinarians, who can take a li[illegible]. This plan they can follow to any extent.

‡ [illegible]ve's Celsus, Book II. cap. 15, p. 88.

of grooms to curry their horses, *who would add ten years and upwards to their own comfortable existence*, if they would employ but one of them to curry themselves with a flesh-brush, night and morning* !

In considering this most interesting branch of the present inquiry, I propose briefly to consider the following points: 1. The various modes of applying friction ; 2. The time when it should be applied ; 3. The advantages of using it ; 4. The application of unction with it ; and, 5. Any miscellaneous particulars.

1. There are various modes of applying friction to the body, as by the hand—with flannel or coarse linen—with a flesh-brush—also accompanied by water, aromatics, or embrocations.

Friction with the hand, is called *champuing* in the East Indies. The daily use of it is there considered as indispensible. From this salutary expedient, they find that a person receives nearly as much benefit as from a tepid bath. In hot countries, where sufficient exercise cannot be taken in the open air, this sort of exercise cannot be too much recommended †.

Instead of the naked hand, some employ a piece of coarse flannel, or linen, or flannel gloves, or quilted silk gloves, and think, that in this way the flesh is compressed more than with the flesh-brush, by which, indeed, the surface of the body is principally affected.

The flesh-brush, however, I consider, on the whole, to be by far the best mode of applying friction, unless where the assistance of aromatics or embrocations is necessary; for it may be adapted, in point of hardness, to the nature of the case for which it is intended; it moderately compresses the muscles, clears the skin effectually, and excites a pleasing glow.

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* Valangin on Diet, p. 217. Almost every body knows what well currying will do to horses, in making them sleek and gay, lively and active, insomuch that it is equivalent to half their food. This it can no otherwise effectuate, than by assisting nature to throw off by perspiration the recrements, or grosser parts of the juices, which stop the full and free circulation.—*Cheyne's Essay [illegible] Health*, p. 10[illegible].

† It is owing to the heat of the climate, that champuing, or friction, is so necessary in the East Indies. Dr. Cadogan, therefore, in his Dissertation on the Gout, so much quoted, does not give a just representation of this mode of exercise. He says, that the Asiatics, understanding luxury much better than we do, and knowing that it is not to be had without some degree of delicate health, do just enough to keep them, in this languid, effeminate state, free from pain. Those who are rich among them, employ people called *champers*, to rub, chafe, and pat them all over, at least twice a day, to move their blood, and keep their vessels free, without any labour or exertion of their own powers. This daily practice, in hot countries, where they live in the most slothful indolence, is not only necessary to them, but a great luxury. The Greeks and Romans too, when they became luxurious, fell into habits of this kind, and strigilled, and curried, and bathed, and oiled, almost every day.

In cases where the application of cold water, in addition to moderate friction, is recommended, a sponge is sometimes made use of, from its power of absorbing water But by immersing a flesh-brush in water, the same effect may be obtained; and the advantages of the flesh-brush, and the warmth and circulation which it occasions, may be obtained at the same time*.

As to aromatics, or embrocations, these are certainly best applied, (though a flesh-brush might also be made use of), by means of coarse and warm woollen cloths or gloves, which may either be impregnated with the smoke of burning amber or mastic, (by the steam of which the relaxed parts of the body are strengthened), or with such embrocations as may be recommended by medical men, according to the nature of each particular case.

2. Friction, in general, is best applied, either in the morning or at night. In the morning, there is a great deal of acrid matter about the pores of the skin, sufficiently prepared to be perspired, and which waits for nothing but exercise to be thrown out. In that case, friction in the morning must be of great use, to invigorate and harden the head and other parts of the body†.

When the stomach is disordered, or incapable of performing its functions, rubbing the belly with a brush, or with flannel, is of great use. Friction, thus applied, for half an hour every morning, (and for the same space at night, if it should be necessary), will strengthen the stomach, and organs therewith connected, more than moderate exercise for a whole day. But, for obtaining such beneficial effects, it must be performed on an empty stomach, or in bed, before we rise, gently and steadily, in a circular direction, and at least for five or ten minutes at a time.

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* The following plan may be adopted for that purpose. Rub your head every morning with a flesh-brush that has been immersed in a bason of water. The flesh-brush absorbs as much water as makes a plentiful ablution; and the effect of cold water is much improved, by the friction of the flesh-brush afterwards. There is no practice so likely to be useful to those who are apt to catch cold, or are troubled with head-achs. It is only calculated, however, for those who wear wigs, or whose natural hair is very much cropped. The flesh-brush must have no leather about it, which the water would soon destroy.

† Burton on the Non-naturals, p. 280.

Friction is also of great use at night, as its effects are favoured by the after retirement to bed, where a free perspiration of the parts is apt to ensue*.

3. Frictions will certainly be found highly useful in promoting the growth and activity of children, in preventing any obstructions to which they are liable; and, above all, may be considered as an effectual remedy for the rickets, more especially if cold bathing be used at the same time. In all diseases of the skin, it is likewise highly serviceable†.

The advantages of friction to gouty persons, are ably described by Cadogan. He observes, that when a person is unable to walk or ride at all, he may, by degrees, be brought to do both, *by means of friction*. For that purpose, a handy active servant or two must be employed to rub him all over, as he lies in bed, with flannels, or flannel gloves, fumigated with gums and spices, which will contribute greatly to brace and strengthen his nerves and fibres, and move his blood, without any fatigue to himself. He must thus endeavour, gradually to get strength to walk and ride, till he be able to walk two or three miles at a stretch, or to ride ten without being weary‡.

Frictions are also of great use in various other cases, as in rheumatisms, paralytic affections, and, above all, either in emaciation, on the one hand, or corpulency on the other. The ancients, it would appear, had the art of rendering fat people lean, and those that were too lean, fleshy, partly by means of active exercises in general, but more especially by frictions§. Galen, in particular, is said in the space of a few days, to have restored the flesh of many who had been emaciated, by means of friction with fat substances. It is reported, on respectable authority, that a child having one of his legs strong and lusty, and the other much emaciated, frequent friction with flannels, held in the fumes of myrrh and benjamin, rendered his emaciated leg as strong and lusty as the other*.

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* Turnbull's Medical Works, p. 125.

† Buchan's Practical Observations concerning Sea-bathing, p. 38.

‡ See Cadogan's Dissertation on the Gout, p. 86. This may seem but a trifling prescription to those who have never tried it sufficiently; but is of the utmost consequence, and its effects are amazing, especially upon all those who are too weak to use any muscular motion themselves. A little friction may have little or no effect; but if long continued, and repeated often, with fumigated flannels, it will do more to restore health, and support it afterwards, than most other expedients. It promotes circulation, and perspiration, opens the pores, forces the fine vessels, strains and purifies the blood, and this without the assistance of any internal stimulus. It is this that keeps horses in health, with very little exercise.

§ Salzmann's Gymnastics for Youth, p. 169.

Friction is peculiarly calculated for those who have weak nerves, who lead a sedentary life, who are subjected to a weakness in their joints, or who are threatened with paralytic disorders. They are thus enabled to supply the want of exercise of other kinds, provided their whole bodies, more particularly their limbs, are rubbed for half an hour, morning and evening, with a flesh-brush, flannel, or napkin, till the parts begin to grow red and warm. The friction should begin with the arms, hands, feet, legs, and thighs; and thence ought to proceed to the shoulders, back, and breast: the head should be rubbed last of all. The effects of this practice, when used with care and constancy, are more important than can be imagined; and though it cannot be attended with all the advantages derived from exercise in the open air, yet it is the best substitute for more active exertions that can possibly be suggested.

4. Bacon strongly recommended, that the skin should be lightly anointed with oil, after friction, lest the outward parts should become dry and juiceless by perspiration; and, in vehement exercises, he recommends unction to be used, both in the beginning and at the end, as was anciently practised by champions.

In regard to the external application of oil to the human body, the best treatise that has hitherto appeared upon that subject, is written by Mr. William Hunter, a surgeon in the service of the East India Company: it is drawn up with uncommon distinctness and ability, and with every appearance of deep research. The following are the general results which he deduces from his inquiries; 1. That the application of oils, and other unctuous substances, to the skin, serves to guard the body against the inclemency of the weather, particularly cold and moisture; 2. That it may prevent too profuse perspiration in hot weather, which is one cause of debility; and, 3. That in dropsical complaints, the application of oil is useful, more especially when joined to brisk, and long-continued friction, as it does not prevent the giving of proper medicines by the mouth. At the same time it may be considered, in this disease, as a powerful auxiliary*.

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* Burton on the Non-naturals, p. 280. Another child, about five years of age, who could not stand, and whose back was so weak that it was quite bent, by using friction all over his body, more especially on the back-bone, and with the assistance of cold bathing, was quite recovered.

5. The following miscellaneous observations, on the subject of friction, remain to be taken notice of.

Celsus, with some indignation, refutes the claims of Asclepiades, who pretended to be the inventor of friction. He certainly improved the practices connected with it, though its general advantages were comprised in a few words by Hippocrates, who said, " that friction, if violent, hardens the body; if gentle, softens it; if plentiful, it extenuates; and, if moderate, increases its bulk†."

One of the principal advantages of friction is, that it renders the use of flannel, in many cases, unnecessary. The flesh-brush also, if used about the throat, is of great service in strengthening the organs about the tongue, and preventing hesitation in speaking. If used likewise behind the ear, it has been found in a great measure to prevent, and even to cure deafness, the wax in the ear being apt to accumulate as age advances, owing to defective perspiration.

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* Hunter's Essay on the Diseases incident to Indian Seamen, one volume folio, printed at Calcutta, anno 1804, p. 158. App. No. 11. Mr. Hunter also takes notice of three other questions, regarding the use of oil: 1. Whether it is a protection from contagion; 2. Whether it is worthy of trial in the incipient stage of plague; and, 3. Whether nourishment may thus be conveyed. In regard to the last point, it is evident, from the preceding observations in the text, that anointing, combined with friction, has a fattening tendency. Another ingenious author, on the external application of oil, remarks, that among the ancients the practice of anointing the surface of the body with odoriferous oil, was generally associated with the use of the bath. Lord Bacon, in his History of Life and Death, regrets the disuse of this custom, and thinks the revival of it would be conducive to the preservation of health, and the prolongation of life, by preventing what he terms the predatory effects of the external air upon the spirits. By this expression, he probably means, regulating perspiration within due bounds. In what particular cases this practice would be found most salutary, the experience of modern times is perhaps not sufficient to decide. The external use of oil has lately been affirmed to have cured the plague. From the copious sweats that follow its use in that disease, we may conclude, that it does not impede the cutaneous discharge. To swimmers, who are desirous of remaining long in the water, it may be of use, by lubricating the surface of the body, to enable them to glide more swiftly through the liquid element. From various experiments, it is ascertained, that oil may be applied over the whole surface of the body, at all seasons of the year, without danger. It appears to increase the general warmth of the system, and might probably be found useful in obviating the disagreeable effects of easterly winds on delicate constitutions, by preventing the too quick evaporation of moisture from the surface of the body. The oil of the cocoa-nut leaves no appearance of unctuosity behind it, and on that account is to be recommended.

† Grieve's Celsus, Book II. cap. 14, p. 85.

On the whole, it evidently appears, that the practice of friction is not sufficiently understood or attended to in modern times. It would certainly tend much, therefore, to the improvement of medicine, if all that is recorded upon this subject were collected, and thoroughly digested, and if experiments were afterwards tried, to ascertain the effects of the different rules therein laid down*. Great improvements have been very successfully made in the art of friction, as a cure for disease, by Mr. Grosvenor of Oxford, an account of which, it is to be hoped, that his zeal for the comfort and health of his fellow creatures, will soon induce him to publish.

7. *Electricity.*—This is a kind of passive exercise, which exceeds every method hitherto known, for exciting the quickest and most powerful motion, in various parts of the body. When the electric force is applied with proper caution and judgment, it may be of infinite service; and it is probable, that much may be done with it, in the cure of disease; in particular, that the extremes of relaxation and constriction, in animal fibres, may often be remedied by it.

8. *Galvanism.*—The discovery of animal electricity, by the celebrated Galvani, has pointed out another mode of exercising the muscles of the body, which may yet be found of important advantage in the cure of disease; but hitherto, the expectations which were formed from it, have not been fulfilled.

SECT. II. *The Advantages of Exercise, in preventing or curing Disease.*

THE general uses of bodily labour and exercise, and the various sorts thereof, having been already explained, it may next be proper to consider the advantages of exercise, 1. In preventing disease; 2. In curing disease, and restoring health, without the assistance of medicine; and, 3. In facilitating a cure when medicines are necessary.

1. *Exercise prevents Disease.*

It has been justly observed, that if only some of the many advantages resulting from exercise, were to be procured by any one medicine, nothing in the world would be in more esteem, or more anxiously sought after; but that we are too apt to slight the advantages which are to be procured by other means than medicine, when they cannot be obtained without trouble*. Hence exercise is neglected, though, by attending to it, many of those disorders to which mankind in general fall a sacrifice, might, in a great measure, be prevented.

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* On the subject of friction, Strother's Essay on Health, and Fuller's Medicina Gymnastica, p. 197, may also be consulted.

There was a time, we are told, when diseases were little known, when age was the only infirmity, and death the sole physician. That could only be the case, when men, 1. By labour, or abundant exercise, promoted a regular and complete circulation of their blood; 2. By great exertion freed their bodies from impurities; and, 3. By constant exposure to the open air, were hardened against the changes of the seasons, and suffered no inconvenience from them.

By such means as these, we might consider ourselves completely secured against three-fourths of the usual catalogue of diseases.

1. The necessity of labour or exercise, to promote the regular and complete circulation of the blood, is evident from this circumstance, that the strength of the heart and arteries alone, in a sedentary course of life, is by no means sufficient to keep up and perpetuate, with sufficient efficacy, that circulation throughout the smaller blood-vessels. The assistance and joint force of all the muscles of the body, acting at proper intervals, are essential for that purpose. Without this extraordinary occasional aid, which can only be effected by labour or exercise, the smaller vessels are, in process of time, choked; and the delicate springs of our frail machines, lose their activity, and become enervated; whence numberless evils of the chronic kind, and every species of nervous disorders, take their origin†.

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* See Fuller's Medicina Gymnastica, Preface.

† Cadogan's Dissertation on the Gout, p. [illegible].—The principal source of our well-being arises from the circulation of our fluids, especially the blood. A brisk circulation animates the whole man. Even a phlegmatic person is exhilarated when any thing sets his blood in commotion; and when this takes place in an immoderate degree, the man is agitated even to delirium. These effects are well known. Continued rest weakens the circulation, till at length the blood feebly creeps through its vessels: for the heart is not of itself sufficient to give it due motion: to accomplish this, muscular movement is likewise requisite. But rest of body relaxes the muscles, diminishes the vital heat, checks perspiration, injures digestion, sickens the whole frame, and thus numberless diseases are introduced. There is not a single part of the human machine, which a sedentary mode of life does not debilitate, and the nerves more especially suffer by it. Generally speaking, says Ackermann, a sedentary life is the source of all those diseases which physicians call cachectic, the number of which is considerable. Among them

When such is the state of the body, it is impossible to expect relief from medicine. The cordials, volatiles, bracers, strengtheners, given by common practitioners, will keep up an increased circulation for a few hours; but their action soon subsides, the stimulus ceases, and they must be repeated and re-repeated during life. *The circulation of the blood, indeed, can only be properly carried on, through the medium of exercise or labour.* No art can ever come up to nature, in this most salutary of all her operations. That sprightly vigour and alacrity of health, which we feel and enjoy in an active course of life; that zest in appetite, and refreshment after eating, which sated luxury seeks in vain from art, is owing wholly to new blood, made every day from fresh food, prepared and distributed by the joint action of all the parts of the body[*].

2. Not only must the blood be duly circulated, but it must be cleared from impurities; and that will be effected by labour or exercise, under a coarse, and even an unwholesome regimen. The culinary arts certainly were not of old cultivated so much in England as at present; and on the whole, the old English were very intemperate livers. But in those days, if a man or woman was obliged to go a little way, it was on foot; if to a greater distance, it was on horseback; and in both cases there was abundant exercise taken in the open air. The use of the bow and arrow, and the art of wielding the broad sword, and other violent and healthy exercises, were then necessary accomplishments for every person that ranked as a gentleman. *By these airy and masculine exercises, the digestive powers were strengthened, and those acrid humours were dissipated by perspiration; which, when retained in the blood, occasion the gout, and various other disorders*[†].

3. There are no means by which health can be more effectually secured, than by accustoming the body to be duly exercised in the open air, and exposed to all the changes of the atmosphere. Indeed, the advantages of air and exercise united, cannot be too highly appreciated. The indolent may be compared to rusty machines, which are soon

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are jaundice, atrophy, worms, tetter, obstruction of the natural excretions, dropsy, &c. : for these, exercise is the best remedy; it strengthens the vessels, says Tissot, preserves the fluids in a healthy state, quickens the appetite, facilitates the excretions, invigorates the spirits, and excites pleasing sensations throughout the whole system.—*Salzmann's Gymnastics for Youth*, p. 69.

[*] Cadogan's Dissertation on the Gout, p. 34.

[†] Smith's Letter to Dr. Cadogan, p. 65.

corroded and destroyed; whereas the active, though they must also ultimately perish, yet are always bright and polished, and constantly fit to execute any purpose for which they were destined.

It has been observed, that what are called *liver complaints*, and other glandular obstructions, are much more frequent now than formerly. This is chiefly owing to inactivity; and nothing but exercise can prevent them. So long as the liver, the kidneys, and other glands of the body, duly perform their respective functions, health is seldom impaired; but when they fail, nothing can restore it.

Not only is the necessity of exercise in general to be enforced, but particular exercises are found to be admirably calculated for the prevention of particular diseases, with which individuals have a tendency to be afflicted*. In regard to nervous complaints in particular, nothing but exercise and open air can brace and strengthen the nerves, or prevent the endless train of diseases which proceed from a relaxed state of these organs. We seldom hear the active or laborious complain of nervous diseases: these are reserved for the sons of ease and affluence†.

It is farther to be observed, that the more luxuriously any individual lives, the more he requires exercise; and that not only of the passive, or even of the active, but also of the violent kind. It is impossible that he can otherwise preserve his health, and at the same time indulge in luxurious gratifications. To persons in that sphere of life, the subject of exercise is of peculiar importance, and requires the most scrupulous attention. Indeed, the poor countryman has no just ground to complain of the extent of his labour, or the hardness of his fate; for he enjoys a thousand times more real happiness, than the inhabitant of the gilded palace, who rolls in luxury, and who, for want of labour or exercise, is courted in vain by every enticement to repose‡.

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* Willis's Art of Preventing Diseases, p. 158. See also, Lynch's Guide to Health, p. 238. The lungs are fortified by loud talking, and walking up an easy ascent. The digestion and the nerves are strengthened, and most head-achs cured, by riding; the stone and gravel eased, by riding in a coach over rough ground; rheumatic pains by playing at tennis, &c. till one sweat, and then going to a warm bed, to promote perspiration; feeble arms by playing at shuttlecock or tennis; weak hams by foot balls, and weak backs by ringing or pumping.—*Cheyne's Essay on Health*, p. 107.

† Buchan's Domestic Medicine, p. 77.

‡ Turnbull's Medical Works, p. 128.

The effect of want of bodily exercise upon the mind, is a circumstance well entitled to peculiar attention. A costive habit, so often resulting therefrom, may, as Kotzebue observes, extinguish the divine flame of genius: and it can hardly be doubted, that if the body labours under ill health, the mind will be unable to achieve any thing that is great and noble.

> Corpus enim male si valeat, parere nequibit
> Præceptis animi, magna et præclara jubentis[*].

If any thing can rouse an anxiety in favour of regular exercise, and a due application thereof, it must be the effect it had on two of the most celebrated characters of ancient times, *Cicero* and *Cæsar*, who, without the advantage of a close attention to exercise, would have perished, unknown and disregarded.

Cicero is described by Plutarch, as being, at one period of his life, extremely lean and slender, and having such a weakness in his stomach, that he could eat but little, and that not till late in the evening. He travelled to Athens, however, for the recovery of his health, *where his body was so strengthened by gymnastic exercises*, as to become firm and robust; and his voice, which had been harsh, was thoroughly formed, and rendered sweet, full, and sonorous[†].

In regard to Julius Cæsar, the same author informs us, that he was originally of a slender habit of body, had a soft and white skin, was troubled with pains in his head, and subject to epilepsy; but by continual marches, coarse diet, and frequent lodging in the fields, he struggled against these diseases; and found the exercises and hardships of war, the best medicine against these indispositions.

With such examples before us, who would not be animated to take that exercise, without which Cicero would never have triumphed at the bar, nor Cæsar in the field of battle? And it is absurd to imagine, that a due attention to exercise, requires too much time, and is inconsistent with elevated situations, or literary fame. By whom were greater actions performed, or works more conspicuous for mental ability drawn up, than by the two distinguished characters above alluded to?—and yet they were cut off at an earlier period than nature intended.

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[*] Marcell. Palign. lib. 10. See, also, Salzmann on Gymnastic Exercises, p. 71; and Fuller's Medicina Gymnastica, p. 21.

[†] See Plutarch's Life of Cicero.

2. *Exercise cures Disease, without the Aid of Medicine.*

There can be no doubt that exercise is highly efficacious in many disorders; and Hoffman, in a special treatise, justly celebrates it as the best of medicine[*].

There are many instances recorded in ancient authors, of the great efficacy of exercise in the cure of diseases. Plato tells us, that Herodicus was cured of the hypochondriacal disease by exercise. Pausanias relates, that Hysmoneus was relieved from great weakness of nerves, by addicting himself to the five olympic exercises, and thereby acquired such a degree of vigour, as to obtain many prizes at the Olympic games: And Plutarch says, that Laomedon was so perfectly cured of an obstinate disease by exercise, as to excel in running[†].

In many branches of medicine, the ancients were certainly inferior to the moderns; but they treated diseases with great success; for they applied themselves, with extraordinary diligence, to acquire a thorough knowledge of the symptoms of every disorder; *and called in the aid of corporeal exercises*, by means of which, they supplied what was wanting in other remedies[‡]. Herodicus in particular, is said to have carried *gymnastic medicine* to such a pitch, as to have actually applied a particular kind of exercise to each disease[§].

The particular diseases, in the cure of which, exercise has been found the most effectual, are, 1. The gout; 2. The Rheumatism; 3. The consumption; 4. Nervous disorders; 5. The bilious colick; 6. The dropsy; 7. The palsy; 8. Diseases of the mind; and, 9. Other disorders.

1. *The Gout.*—Sydenham affirms, that nothing so effec-

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[*] De Motu Corp. Op. Med. A celebrated poet, (Dryden), asserts, that,

> "The wise, for cure, on exercise depend:
> God never made his work for man to mend."

[†] Adair's Medical Cautions, p. 410.

[‡] Salzmann's Gymnastics for Youth, p. 154.

[§] See Haller on the ancient authors who have written on health; Code of Health, 2d edit. vol. ii. p. 17[illegible]. Plato de Republica, lib. ii. p. 622, celebrates also Ikhus of Tarentum, for his skill in gymnastic medicine.

tually prevents that indigestion of the humours, (which he considers to be the principal cause of the gout), and consequently strengthens so much the fluids and solids, as exercise. But as there is more necessity for making a thorough change in the constitution in the gout, than in any other chronic disease, so exercise, unless it be used daily, will do no service, and perhaps may do mischief, by causing a fit, if resorted to, after it has been abandoned for a considerable space of time. Indeed, if exercise be omitted, all the remedies which have hitherto been discovered, will be of little avail. The exercise, however, should be moderate; because, if violent, aged persons, who are chiefly subject to the gout, have their spirits too much wasted, and their concoctive powers are injured, which regular and gentle exercise would strengthen. Sydenham considered riding on horseback as the best sort of exercise; and indeed so advantageous in the gout, and other chronic diseases, that if any person, he observes, were master of so effectual a remedy, and possessed, at the same time, the means of concealing it, he might easily raise a considerable fortune. If riding on horseback cannot be used, going frequently out in a carriage, he observes, will answer almost as well[*].

2. *Rheumatism.*—The beneficial effects of exercise in chronic rheumatism, more particularly in the sciatica, has been lately ascertained in a most satisfactory manner. After every other remedy had been tried in vain, a gentleman resolved to try the effects of *sweating walks*. For that purpose, he got stockings, drawers, and shirts of fleecy hosiery, and applied eight thicknesses of flannel to the chief seat of the disorder, besides warm pantaloons and a great-coat. The walk he took, thus equipped, was from one to two miles, according to the state of the weather. The consequence was a profuse perspiration. When he returned home, he had a couple of changes of well-aired flannel, and then lay down upon a bed not warmed. He is convincedthat exercise is greatly preferable to heated air, or hot water. His complaint was completely cured; his appetite increased; his general health improved; and he became less sensible of cold, or variation of temperature[†].

3. *Consumption.*—In most chronic diseases, but especially in consumption, riding on horseback has given relief,

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[*] Swan's Sydenham, p. 497.

[†] Medico-Chirurgical Transactions of London, vol. iii. p. 310. The account is communicated by Dr. Mancet, of Guy's Hospital.

in a manner almost incredible; and, indeed, is not only proper in slight indispositions, accompanied with a frequent cough and wasting, but, according to Sydenham, even in confirmed consumptions, wherein the looseness is succeeded by night sweats, which are the general forerunners of death, in those who perish by this disease*.

Nor is riding the only exercise, by which a consumption may either be prevented or cured. A gentleman, whose son was troubled with pains in his left side, and seemed to be threatened with a consumption, if it had not actually begun, thought that it might be owing to want of exercise, and prevailed on him to try *the skipping rope*. He began this exercise about twelve years of age, and continued it for about a twelvemonth, when it became no longer necessary, as his health was perfectly re-established, and he was completely cured of all tendency to consumption†.

4. *Nervous Disorders.*—Nothing can surpass the efficacy of exercise in nervous disorders. As the labouring classes of the community are seldom afflicted with them, it was natural to suppose that a resolute course of exercise would be an effectual remedy. Many have been cured by perseverance in walking; and before they have travelled many days, their complaints have been entirely removed.

5. *The Bilious Colick.*—Sydenham found no remedy so effectual in this disorder, as riding on horseback, provided sufficient evacuations had been previously made, and the

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* See Swan's Sydenham, p. 445. It is remarked by Dr. Swan in a note, that riding on horseback, in the beginning of the distemper, and in young persons of a plethoric habit, sometimes proves detrimental, by occasioning frequent returns of a spitting of blood; or, where the lungs are considerably tainted, it will bring on a fatal inflammation; but in any hypochondriac consumption, or atrophy, moderate exercise, frequently repeated, is highly proper. See, also, Hoff. Op. tom. iii. p. 291. In addition to what Sydenham says, Fuller, in his Medicina Gymnastica, has assigned various reasons in support of the docrine, that riding on horseback, if taken in time, is an effectual remedy for a consumption; and he quotes the instance of Dr. Baynard, who, by constant riding in the open air, and more especially in the highest places, recovered from a consumption, when every body gave him over as lost.—*Fuller's Medicina Gymnastica*, p. 116, &c. &c. where other instances are also quoted. There is another instance, mentioned in '*The best Method of Preserving Health*,' p. 139, where a patient was cured by riding, after being brought so low, that no recovery could be expected, either from medicine or even exercise. In Dr. Buchan's Domestic Medicine, also, p. 178, it is stated, that he knew many instances of consumptive patients, who had been sent from a populous town in England, (Sheffield), with orders *to ride about*, and to live on milk and vegetables, and returned in a few months quite plump, and free from complaint.

† It is proper to observe, that the feet became much broader than probably otherwise they would have been, in consequence of this exercise.

and the riding was persisted in for several days afterwards. To prevent the return of the pains which accompany this disorder, he recommends, that an opiate should be given, morning and evening. By riding on horseback, the morbific matter is brought to the habit of the body, and the blood, broken and divided by the continual motion, undergoes, as it were, a new depuration. The bowels, also, are greatly strengthened and refreshed by this mode of rousing the natural heat*.

6. *The Dropsy.*—There is a species of the dropsy, of the *anasarcous* kind, for which riding on horseback is an effectual remedy. The ancients, it would appear, relied much on exercise for the cure of this complaint; and it is a system which ought more to be attended to in modern times, than, I understand, is the case†.

7. *The Palsy.*—A person threatened with the palsy, was ordered to take a journey to Bath for a cure. In going down he thought he would try the effect of walking, having it always in his power to go into his carriage, when he was fatigued; but he derived so much benefit from the exercise he thus took, that he was cured of the disorder before he reached Bath‡. At the same time, in most cases of threatened apoplexy, exercise cannot be recommended.

8. *Diseases of the Mind.*—The celebrated Hoffman cured idiotism by exercise; and, according to Descartes, the mind depends so much on the constitution and state of the bodily organs, that if any means of increasing sagacity were to be found, they must necessarily be sought for in the art of medicine, accompanied by a due proportion of exercise. A well framed, and well exercised body, is precisely what facilitates and secures the proper performance of the mental functions; and a healthy organization of the bodily powers, is the best foundation for that noble endowment, known under the name of *common sense*, (however uncommon in fact it is), or a sound understanding §.

9. *Other Disorders.*—A number of cures, in various other disorders, have been performed by the exercise of sailing. A respectable physician has collected several cases, in which this exercise has been of the highest service, not only in

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* Swan's Sydenham, p. 191.

† This subject is very fully treated of in Fuller's Medicina Gymnastica, p. 107, and 225.

‡ See Fuller's Medicina Gymnastica, p. 482, where there are other facts regarding the cure of palsy by vigorous exercise.

§ Salzmann's Gymnastics for Youth, p. 180.

the complaints already mentioned, but also in nervous pains of the stomach, in vapourish languor and fever, in doubtful and difficult recovery, &c.*

In regard to the choice of exercise for curing diseases, it has been justly remarked, that there are many particulars to be attended to. Every kind of exercise, and every degree of it, is not fit for every constitution; far less in every distemper, or at all times. Which is the proper sort of exercise to be recommended, must depend upon particular circumstances of habit, age, constitution, or disease†; and in cases of disease, taking the advice of an intelligent physician ought not to be neglected.

3. *Exercise facilitates a Cure, where Medicine is necessary.*

Exercise is well entitled, in various respects, to be considered as *a common aid to physic*, to use a phrase which Asclepiades originally made use of. In fact, when the body is, by exercise, preserved in good health, and all the humours are wholesome, if it is attacked by disease, it is the more easily restored to health. Hence, it is well observed, that we ought undoubtedly to attribute the wonderful success of the ancient physicians, in curing diseases, with such indifferent materials as their pharmacy afforded, to the patient having his blood in general so pure, and his body so healthy, by an attention to exercise ‡.

It is to be observed, that exercise is to physic, what a bandage is to surgery, an assistance or medium, without which, many other prescriptions, though ever so excellent, will not succeed. The virtue of some medicines is increased by means of exercise; while, in others, exercise is only necessary to remove some inconvenience attending their operation, which is often so great, as to deter people from using them so liberally as they ought to do §. Thus, medicines of a balsamic and chalybeate nature, are not likely to answer the purposes for which they were intended, unless they are accompanied with exercise; and if exercise is omitted in the case of gouty patients, all the other remedies which have hitherto been discovered, will be of little avail[*].

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* See Gilchrist on the Use of Sea Voyages in Medicine, p. 17, &c.

† Ibid. p. 12.

‡ Fuller's Medicina Gymnastica, p. 67. A body duly exercised in the open air, if attacked by any toil or sickness, is not soon affected by it, or easily subdued, the inward parts being all sound, and in good condition, and the outward so well fortified against external attacks, as not easily to receive any injury from the attacks either of cold or heat. See Lucian's Dialogue of Gymnastic Exercises, translated in West's Dissertations, p. 171.

§ Ibid. p. 58.

It is farther to be remarked, that by means of the invigorating quality of exercise, the efficacy of medicine is increased, by extending its powers to every part of the system, and at length promoting its discharge when it is no longer useful[†].

I shall conclude this part of the subject, with the advice of an elegant poet, which cannot be too strongly recommended to the attention of every individual, to whom health is an object.

> "Toil, and be strong. By toil the flaccid nerves
> Grow firm, and gain a more compacted tone;
> The greener juices are by toil subdu'd,
> Mellow'd, and subtiliz'd; the vapid old
> Expell'd, *and all the rancour of the blood*[‡]."

SECT. III. *General Rules regarding Exercise.*

THE rules with regard to exercise may be classed under the following general heads, 1. Time; 2. Place; 3. Quantity; 4. Age; 5. Sickness; and, 6. Miscellaneous remarks.

1. *Time.*—Authors differ considerably regarding the proper time for taking exercise. Some recommend early in the morning, when the stomach is empty, and the body refreshed with sleep; but many cannot bear to take exercise when fasting, and, consequently, that rule cannot be uniformly recommended. It is generally admitted, that between breakfast and dinner, when the weather is not too hot, is an excellent period for active exercises in the open air[§]. It is certainly injudicious to take a great deal of exercise immediately after so heavy a meal as dinner usually is in this country; at the same time, during the summer season, the dinner is frequently earlier and lighter, and, consequently, at that period, persons may take exercise in the evening as well as the morning[||]. It is well known, that

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[*] See the Best Method of Preserving Health, p. 138.

[†] Adair's Medical Cautions, p. 410.

[‡] See Armstrong's Art of Preserving Health, book iii. line 39.

[§] Dr. Franklin oberves, that exercise should precede meals, not immediately follow them; the first promotes, the latter, unless moderate, obstructs digestion. See his Essay on the Art of Procuring Pleasant Dreams.

[||] Darwin justly remarks, that in summer, weak people cannot continue too long in the air, if it can be done without fatigue; and in winter, they should go out several times in a day, for a few minutes, using the cold air violent exercise is more necessary in cold than in hot countries, and is peculiarly essential during the winter season, for promoting perspiration, as the best defence against outward cold, and likewise for the better digestion of the gross and copious aliment we are apt to live upon at that period of the year[*]. Nothing, indeed, is more conducive to bodily health, than long walks in winter, when the air is pure and bracing, and the cold excites quickness of motion. Nor has any of the seasons a more beneficial influence on our health than winter. But this we counteract, by continually indulging in the heated air of our parlours, which lays a foundation for the diseases of the spring, which we then erroneously ascribe to that season of the year[†].

2. *Place.*—In all large and well regulated cities, there ought to be play-grounds, or places for public exercise, where labourers, and people who work at particular trades, might assemble at certain hours for recreation, and amuse themselves with walking, or other healthful exercises, in order to prevent those diseases which may arise from the usual posture required in their business, if continued without remission, or any relaxation or change[‡].

The general decay of those manly and spirited exercises, which formerly were practised in the metropolis and its vicinity, has not arisen from any want of inclination in the people, but for the want of places for that purpose[§]. Such as in times past had been allotted to them, are now covered with buildings, or shut up by enclosures; so that, if it were not for skittles, and the like pastimes, they would have no amusements, connected with the exercise of the body; and such amusements are only to be met with in places belonging to common drinking-houses; for which reason, their play is seldom productive of much benefit, but more frequently becomes the prelude to drunkenness and debauchery. Honest Stow, in his Survey of London, laments the retrenchments of the grounds appropriated for martial pastimes, which had begun to take place, even in his day[‖].

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like a cold bath, to invigorate and render them more hardy.—*Darwin's Zoonomia*, vol. ii. 692.

[*] Arbuthnot on Air, p. 211.—See, also, Strother on Health, p. 16.

[†] Salzmann's Gymnastics for Youth, p. 232.

[‡] Valangin's Treatise on Diet, 213.

[§] Near all great cities, there should be *hyppodromes* and *ambulacrums*, for the benefit of air and exercise; which might be erected, either by subscription, or might, perhaps, be no unprofitable source of commercial speculation.

[‖] Strutt's Sports and Pastimes, Introduction, p. 46.

3. *Quantity.*—The doctrines which have been published regarding the quantity of exercise to be taken, differ materially; and, indeed, it must necessarily vary, according to a number of circumstances, as age, the season, the constitution, the object, &c.

Cheyne observes, that the valetudinarian, and the studious, ought to have stated times for riding or walking, and that in good air. Three hours should at least be allotted for riding, or two for walking, the one half before dinner, and the other half, in the summer season, in the evening; the first to beget an appetite, and the second to help on digestion, and to promote sleep[*].

It is a just observation, that exercise, at all seasons of the year, should be proportioned to the powers. For the weak, in general, it is better to take three short walks, than one long one. Not only is nothing gained by over-exertion, but subsequent rest does not recruit, and sleep often cannot be obtained[†].

It ought to be constantly inculcated to mothers and nursery-maids, that children, at all delicate, should not be allowed to walk too long at a time. Short efforts, with intervening repose, should be the motto of the nursery. When the bones are in the least too soft, it is incredible how much mischief is done, by keeping the limbs much on the stretch. Even healthy children, of two or three years of age, have become indisposed, by walking about a mile, without even being hurried. Their own feelings are the best criterion[‡].

Exercise, we are told, ought only to be continued until we feel an agreeable lassitude, and a sensible degree of perspiration. If it be carried farther, it weakens, instead of strengthening, the body; and, filling the lungs with heated blood, it may be productive of injurious consequences.

Hence, however useful, and even necessary, exercise is, it ought never to be carried to excess. It is well known, that many labouring men, not only wear out their constitutions by hard work, (which they are peculiarly apt to do, when they work by the piece), but also incur diseases, from which they never recover. Many a fair female, also, has been cut off, by carrying to excess the amusement of dancing, from the fatigue with which it is accompanied[*].

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[*] Essay on Health, p. 98.

[†] Manual of Health, p. 292.

[‡] Ibid. p. 292.

Impressed with these ideas, the celebrated Darwin contends, that the necessity of much exercise has perhaps been more insisted upon by physicians, than nature seems to demand. Few animals exercise themselves so as to induce visible sweat, unless urged to it by mankind, by fear, or by hunger. And numbers of people in our market towns, of ladies, in particular, with small fortunes, live to old age, in health, with very little exercise of body, and without much activity of mind[†].

The disadvantages of excess of exercise, are thus summed up by an intelligent physician. It renders the circulation unequal and tumultuous, weakens the nervous system, and the springs of life; exhausts muscular strength; disturbs and lessens insensible perspiration; and, by promoting sweat, (an unnatural and weakening evacuation), wastes the body, by discharging many of the nutritious parts of our solids and fluids[‡].

Let us now consider the other side of the question.

It is an indispensible law of longevity, that one should exercise, *at least*, an hour every day, *in the open air*[*], when the weather will permit.

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[*] Adair's Essay on Diet and Regimen, p. 71.

[†] Darwin's Zoonomia, vol. ii. p. 692. This doctrine is strongly objected to by Dr. Beddoes, notwithstanding the respect he so justly entertains for the medical philosopher by whom it was brought forward. That many dowagers live long in provincial towns, he admits; but whether they live *in health*, is the question. These females, in general, live in a constant valetudinary state; dissolved by heat; pinched by cold; harassed by sleeplessness on going to bed; unrefreshed by their tardy morning nap; faint when empty; oppressed when full; and, in the intermediate time, suffering under some of the other plagues of indigestion. Their nerves, also, commonly require drams, in the shape of drugs, to render their existence tolerable. See Beddoes's Essay on Consumption, p. 126.

[‡] Adair's Medical Cautions, p. 402. Another author of some eminence, contends, that when exercise affects the muscles only with a weariness or weakness, these are remedied by rest; but when excess of motion dissipates in too great a quantity the moisture of the body, it becomes dry and stiff, the humours grow thick, and can no more circulate through the smallest vessels; the fat is dissolved, returns into the blood, is expelled by the emunctories, and occasions leanness and emaciation; the juices which are intended to nourish the solid fibres, are every where interspersed or lost; the synovia, or that mucilaginous liquor which keeps the tendons and joints supple, and facilitates their motion, is dried up, and the joints grow stiff and rigid; the digestion is not assisted, nor supplied with a proper quantity of saliva, and of gastric juice; the bile is rendered more acrid, and diffuses its malignant quality over various parts of the body; in short, excessive animal motion will corrupt the fluids and solids of the body, as if they had been infected by poison.—*Valangin on Diet*, p. 232.

Those who can, ought to spend two or three hours a day on horseback; those who cannot ride, should employ the same time in walking.

It is a good rule, to appropriate a considerable and fixed time daily, for being out in the open air, taking moderate exercise, in proportion to the constitution and time of life[†]. Exercise, it is said, should, at least once a day, proceed to the borders of fatigue, and never pass them.

On the whole, in regard to quantity, I am much inclined to think, that excess of exercise is not so dangerous, as some physicians are apt to imagine. The judicious Celsus thinks, that it need not be put an end to, until perspiration is commencing, or at least that lassitude which does not amount to fatigue[‡]. So far as my own experience goes, I am convinced, that even excess *is occasionally of use*. Impressed with the opposite sentiment, I was formerly accustomed to take only moderate exercise, sometimes on horseback, and sometimes on foot; walking perhaps three or four miles, at a moderate pace, I thought would be sufficient. But by way of experiment, I was accidentally led to take a walk of eight miles, on an ascent, and in cold weather, and to walk quickly, so as to throw myself into a violent perspiration. The consequence was, a hearty appetite for dinner, and a pleasant and comfortable sensation for several days after. I am persuaded, that by active exercise, and the abundant perspiration thereby excited, the body gets rid of some morbific, and highly noxious matter, which renders the frame dull and sluggish; and that the body will become light and healthy when it is expelled. I would, therefore, strongly recommend it to all persons, who are not too far advanced in years, or not in a weakly state, at least once a month, to take a long ride or walk, from the full conviction that much advantage may be derived from it[§].

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[*] Hufeland on the Art of prolonging Life, vol. ii. p. 207.

[†] Code of Health, 2d edit. vol. ii. App. p. 45.

[‡] See Grieve's Celsus, book i. cap. 2. p. 25.

[§] I am glad to find these opinions corroborated, by the sentiments of an intelligent correspondent, the late Reverend Doctor Gregory of West-Ham, in Essex. The exercise of the mind, when carried to excess, he considers to be pernicious; the exercise of the body, on the contrary, even in excess, as wholesome. Over exertion of the body, it is true, may produce temporary illness; but frequently repeated bodily exercise, certainly, more than any other cause, keeps off chronical complaints.

One observation still remains to be made on the subject of excess of exercise.

Every body knows, that great fatigue may be induced by very little exercise, when it is of the active kind, and requiring strong muscular exertions; whereas, much passive exercise, as sailing, travelling in easy carriages, &c. may occasion little fatigue. Persons, therefore, confound the effects, and erroneously imagine, that they have taken a great deal of exercise when they are extremely fatigued*. It is perhaps a good rule, that the lean should exercise *ad ruborem*, that is, till the body and spirits are gently heated, —for that will help to fatten them; and the fat *ad sudorem*, that is, till they perspire,—for that will help to reduce them, and, consequently, extenuate the body†.

4. *Age.*—It cannot be doubted, that both the nature and quantity of exercise, must vary according to the age of the individual; and that the same rules are not applicable to the young, to those who are in a state of manhood, and to those who are advanced in life.

In regard to youth, from early infancy, to the age of twenty, abundant exercise, without being too exhausting, *is essential to promote the extension of the solids, and the growth of the body.*

As to exercise in youth, it is necessary to distinguish the athletic from the feeble, and not to measure them by the same standard: the former may attempt all kinds and degrees of gymnastic exercises without danger; the latter must proceed more cautiously with respect to both.

Young people should never be set upon any thing beyond their size, their ability, or their strength, as taking too long a step at once, walking too much on a stretch, &c. as such exertions often prove injurious‡.

Those who are in the vigour of life, require active exercises to support the powers of the constitution, and to ward off chronic and other diseases.

Old age requires more circumspection; and, in general, it may be observed, that passive exercises are the best suited to that frail and feeble state. People in years ought to prefer moderate exercise which does not occasion much fatigue, unless their habit of body is too full, when, in order to diminish its bulk, the exercise may be brisker. Walking, on the whole, agrees best with them, unless they have been long accustomed to any other exercise.

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* Code of Health, 2d edit. vol. ii. App. p. 9.

† Lynch's Guide to Health, p. 290.

‡ Salzmann's Gymnastics for Youth, p 424.

There is no rule more essential to those who are advanced in life, *than never to give way to a remission of exercise.* By degrees the demand for exercise may shrink, in extreme old age, to little more than a bare quit-rent; but that quit-rent must be paid, since life is held by the tenure. Whoever examines the accounts handed down to us of the longest livers, will generally find, that, to the very last, they used some exercise, as walking a certain distance every day, &c. This is mentioned as something surprising in them, considering their great age; whereas, the truth is, that their living to such an age, without some such exercise, would have been the wonder.

There is no point to which old people ought more to attend, *than to exercise their lungs*, for it is a decay in that organ which frequently occasions their death. In extreme old age, death proceeds from the gradual cessation of circulation; and a due action of the lungs is indispensible for maintaining circulation in a proper state. It is a well known fact, that a great portion of elderly people drop away, merely from their lungs failing. The advanced age of schoolmasters, and other public speakers, of Prin the glassblower, and others, may perhaps be, in a great measure, attributed to the exercise given to their lungs. Hence the importance to the aged, of preserving an erect posture, to give their lungs full freedom.

5. *Sickness.*—In acute distempers, notwithstanding the doctrines of Asclepiades to the contrary, rest is necessary; but when sickly people get into a convalescent state, exercise, under a proper system, is essential for their recovery.

Sickly persons are apt to be alarmed, at the pain and trouble which often accompany their first attempts to take exercise, at least to any extent. They ought, at the commencement, to desist as soon as they begin to find themselves fatigued; but every day they will feel enabled to bear it longer; and the more they persevere, the stronger they will become*.

Convalescents experience such surprising relief from gentle exercise, and good air, that their friends and medical advisers, ought to insist on the trial being made, disregarding all the objections to the contrary, which the languid state of their mind, and of their body, may occasion.

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* Burton on the Non-naturals, p. 281.

When the patient is exceedingly weak, a cotton hammacoe or cot, ought to be slung in the bed-chamber, or any adjoining room, in the manner they are used in the West India colonies, in which they may be swung daily, to any degree they can bear. This might answer instead of the pensile, or suspended beds, so much recommended by the ancients.

When invalids return from their exercise, if they find themselves chilled by the cold air, instead of warming themselves over the fire, they ought to sit down well-clothed, in a remote part of the room, until their feelings are gradually reconciled to the temperature of the air therein. By this precaution, all the hazard of rushing from one extreme to another, may be avoided.

When an invalid is confined at home by bad weather, any active domestic exercise, like that of the shuttle-cock, ought to be performed several times a-day, in a room ventilated by an open sash, taking care to avoid the draught of air. This will be found a more salutary mode of warming the body, than by the heat of fires[*].

Not a day should be allowed to pass, without a degree of exercise accommodated to the strength of each individual. Few persons, more especially invalids, can long enjoy firm health, under a habit of indolence. It contributes to increase that languor of the animal, vital, and natural functions, which constitutes a very considerable part of every disease[†].

The weak and valetudinary, the studious and contemplative, *ought to make exercise a part of their religion*, as it is among some of the eastern nations: with whom pilgrimages, at stated times, are an indispensible duty, and where mechanical trades are practised by men of all ranks[‡].

Those who cannot take a sufficient quantity of exercise, are soon placed in an uncomfortable situation, and are liable to a number of disorders. Sleep is beyond their reach; and want of appetite, flatulency, anxiety, at one time obstructions, or costiveness, at another laxativeness, and all the diversified symptoms of nervous disorders, are their constant attendants. Men of letters suffer much from these circumstances, and are often the most unhealthy of human beings; whereas, if they followed a different plan, and united exercise to mental labour, their thoughts would be brighter, their works would do them more credit; and by living longer, they would be able to accomplish more[*].

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[*] Adair's Medical Cautions, p. 409.

[†] Ibid. p. 402.

[‡] Cheyne's Essay on Health, p. 98.

6. *Miscellaneous Remarks.*—As an apology for indolence, some contend, that when exercise becomes habitual, or is undertaken with reluctance, it ceases to be beneficial; but this is contrary to observation and experience; for those who take daily exercise, never find their strength or appetite impaired by it; whereas those who, from a change of circumstances, have made a transition from labour to indolence, have embittered and shortened the remainder of life[†].

Lord Bacon confidently affirms, that frequent purges, made even familiar to the body, are more available to long life, than exercises and sweats, by which, not only the humours and excrementitious vapours are exhaled and consumed, but, together with them, the juices and good spirits, which are not so easily repaired; and he recommends, for that purpose, purges to be taken immediately before meat, because they dry the body less, and least trouble the belly[‡]. But the dangerous consequences of too frequent purgation, have been already sufficiently explained in the preceding Chapter on Digestion.

There are four expedients to procure warmth in cold weather; fuel, bathing, warm clothing, and exercise. Can there be any question which is to be preferred? Fuel is certainly the worst, from the relaxing quality of fire acting upon the human body, and breaking, in some measure, its texture, as it does that of certain fruits placed to roast before it. A large fire, likewise, is very injurious to the eyes. Bathing is of use as a temporary expedient, for producing warmth. By clothing the body we may acquire heat; but still it is disagreeable, carrying a load of clothes about the person, and it does not prevent the body from being often injured by the impressions of the atmosphere; whereas, if the body is hardened by exercise, nothing affects it[*].

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[*] Willich's Lectures on Diet and Regimen. It is unfortunate, that men of letters are so inattentive to their health. Even that temperance by which many of them are distinguished, is no effectual remedy against the mischiefs of a sedentary life. They should endeavour not to perform all their avocations in a sitting posture, but occasionally to relieve at once their body and mind, by standing or walking about the room. In sitting, also, they ought to vary their posture as much as possible, and to sit sometimes on high stools or chairs, and sometimes on lower ones. A plan might be formed, for the use of men of letters, by which their studies might be conducted in a manner less injurious to themselves than they are at present; but it would be extremely difficult to prevail upon them to alter any system they may have laid down for their own government.

[†] Adair's Medical Cautions, p. 406.

[‡] Code of Health, 2d edit. vol. iv. p. 217.

Exercise is also attended with other advantages, from the occupation it furnishes, and the vacant time which it fills up. What can the indolent do with those hours which they ought to employ in exercise? They must either be devoted to total inactivity, or to unnecessary sedentary application, (for unnecessary it must be, as there is time enough, during the rest of the day, for study), or to vicious purposes. Inactivity in men, frustrates the very design of their creation. If the mind is not engaged in some useful pursuit, it is constantly in quest of ideal pleasures, or impressed with the apprehension of some imaginary evil, sources whence proceed most of the miseries of mankind.

One great advantage of labour or exercise is, that it makes the coarsest fare agreeable. When Dionysius the tyrant had tasted the black broth of Lacedemon, he exclaimed against it as miserable stuff; the cook replied—'It was no wonder, for the sauce was wanting.'—'What sauce?' says Dionysius. The answer was—'*Labour and exercise, in hunting, running, sweating; hunger and thirst; these are the sauces we Lacedemonians use*[†].'

Among the general or miscellaneous rules regarding exercise, the following merit particular attention, as they contain the substance of a number of the preceding observations.

1. Bodily exercise should at least be taken once a day, and before a meal, so as to excite the natural heat or glow[‡]. 2. The effect of any exercise should be as general as possible, and not confined to any particular limb or part of the body. Those kinds of exercise, therefore, which give action to the greatest number of the bodily organs, as walking, running, riding, &c. are to be preferred[§]. 3. Those who

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[*] Institutes of Health, p. 23.

[†] Cicero, 3. Tuscul.

[‡] Exercise, when thus managed, (says Fulgentius), contributes to the preservation of health. It invigorates our faculties; it expels through the pores all superfluous humours; and may well be called, the duty of the young, and the delight of the aged.

[§] The legs of a runner, the lungs of a singer, and the arms of a waterman, are generally stronger than others, because they have habitually used them for years: and the constant and plentiful influx of the blood and spirits into them, makes them more readily admit these supplies, so that the channels of both the vessels and muscles are become larger and more elastic, and consequently stronger. And that exercise, therefore, which is the most universal, will, of course, be preferred, as the most likely to make us strong. —*Strother's Essay on Sickness and Health*, p. 231.

follow any profession, as smiths, weavers, &c. when they exercise their bodies, should pay particular attention to those parts which are usually most deprived of motion. 4. Little benefit is to be expected from exercise, unless it be performed in a pure air; and hence it is, that many manufacturers and artificers, who perform all their labour under cover, and are often exposed to unwholesome effluvia, from the materials they work upon, are more unhealthy than almost any other class of men. 5. The higher and the drier, and the more varied any air is, the more beneficial must be the exercise. 6. By exercise in the open air, the body becomes less sensible to its impressions; and hence various disorders may be prevented. 7. On commencing any exercise, begin with the more gentle, and then proceed to the more violent; and as sudden transitions are always wrong, follow the same rule when exercise is given up. 8. In all exercises, attention must be paid, when it is practicable, to the preserving a proper carriage, or holding the body erect; and also to such a position of all the parts of the body, that none may be exposed to injury. 9. Exercise is more necessary in cold countries than in hot; the perspiration in the latter is violent enough without exercise, but never in the former. 10. A good appetite after exercise, is a proof that it has not been carried to any improper excess. 11. Persons ought not to be irregular or desultory in the exercise that they take, flying from one extreme to another: Hence, sedentary people should commence the use of exercise with much caution, lest the sudden stimulus given to the constitution, by violent exertions, should throw the whole frame into disorder. Moderate and steady exercise, pursued daily, is certainly more safe. 12. After having taken exercise, we should not venture to expose ourselves to a current of air, or rest out of doors, in a cool or exposed place, or lie down upon a green plot. A sudden change of temperature, by suppressing perspiration, may be extremely injurious. 13. After severe exercise, we run a great risk of catching cold, unless we take care to prevent it, by rubbing our bodies well with a dry cloth, or flesh-brush, and changing our linen, which should be previously well dried. 14. When persons are confined within doors, leading a sedentary life, they will not compensate for the want of regular exercise, by a hard ride or walk once a week; for the nerves of such people, being unaccustomed to bear such a degree of agitation, are overstrained and relaxed by it, and the circulation of the fluids, which is in general slow and languid, will be thrown into disorder. 15. Exercise should always be accompanied with a due attention to temperance; otherwise, instead of a remedy, it will become an evil*. 16. Exercise should be repeated as often as is necessary, to keep the body in a healthy state. 17. It is not prudent, to adhere strictly to any particular kind of exercise. The best way is to take different kinds by turns, and to use that longest, which is most suitable to the strength and constitution. 18. It is a good rule, frequently to vary the exercise you take†. Even after a violent ride on horseback, walking for some minutes is beneficial. 19. As a proof of the advantage of a change of exercise, it is remarked by Lord Bacon, that it is requisite to long life, that the body should never abide long in one posture, but every half hour at least, should change it, saving only in sleep‡.

To these general rules the following may be added, as connected with food, both solid and liquid. 1. Muscular motion is most agreeable and healthful, when the stomach is neither too empty, nor too much distended. 2. Nothing can be more injudicious than to sit down to a substantial dinner or supper, immediately after a fatiguing walk, ride, or other violent exercise. When the blood is heated, and the body in a state of perspiration, to devour quantities of solid food can never be wholesome. Every man, therefore, should rest for some time after exercise, before he sits down either to dinner or supper. 3. Exercise is likewise hurtful, immediately after meals, as it obstructs digestion, by propelling those fluids to the surface of the body, which are designed for the stomach, to promote the solution of the food, and thus to suspend the process of digestion.

In regard to liquids, it is an important rule, carefully to avoid drinking cold liquors, either during, or after, violent or great exercise; for the principal heat of the body being brought to the surface, the inward parts feel too sensibly the chill of any cold application, suddenly brought in contact with them. By drinking liquids *blood-warm*, they would quench their thirst better, and they would do no injury*.

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* The opulent derive much less benefit from their diurnal exercise, because they counteract its good effects, by a luxurious indulgence of that appetite which their exercise has excited, superadding thereby, the fever of digestion to the fever of exercise. See Adair's Medical Cautions, p. 406. Some sportsmen are more than usually abstemious on the days of hunting; and have experienced the benefit of living, on those days, on the plainest food, and in moderate quantities.

† The late Earl of Panmure took constant and vigorous exercise; and was accustomed to ride and walk *alternately*, and found great benefit from that practice.

‡ Code of Health, 2d edit. vol. iv. p. 204.

The following rules regard clothing and bathing, as connected with exercise. 1. In taking exercise, much attention should be paid to the ease and freedom of dress, particularly of the neck and joints, that the circulation may not be confined to any one part, but be permitted to move on every where with freedom and ease. 2. If young men, before they enter into any violent exercise, would wear a flannel waistcoat next their skin, they would escape many illnesses; even a cotton vest is better than linen. 3. After violent exercise, the under-clothing should be shifted as soon as possible, and dry warm linen, cotton, or flannel, put on next the skin. 4. It is found very refreshing, after fatiguing exercise, to wash the feet in warm water, before going to bed. 5. Dr. A. P. Buchan is of opinion, that immersion in warm water would be the best mode of averting the injurious effects of a boxing-match.

The following rules regarding exercise have also been given, as connected with the mind. 1. Serious thinking, when we are walking, or taking any other exercise, very soon fatigues us; but if we give ourselves up to amusing thoughts, or the conversation of agreeable and intelligent friends, the exercise is restorative. 2. One should never read when walking; if you must read, when abroad, sit down. 3. Those exercises which give motion to the body, and at the same time amuse the mind, such as bowls, tennis, &c, are particularly serviceable. 4. It is very desirable to have a certain object or spot by which the exertion is to be bounded; as to call at the house of a friend, to see some delightful prospect, and the like†.

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* Lynch's Guide to Health, p. 290. Mackenzie's Hist. of Health, p. 382. We ought not to quench the thirst we generally feel after exercise by cooling liquids. If we cannot wait till we are cool, some warm or tepid liquors may be taken; or, if likely to be faint, a mouthful of bread, with a little salt, to gain time till the blood and the liquor to be drank have acquired a more equal temperature. When heated by exercise, diluents made too hot are highly improper. It is much better to eat some solid meat, such as cold animal food and bread, by which the digestive organs may be exercised; and to drink after it some ale or beer, or wine and water; but never strong wines, or ardent spirits. Perhaps the most suitable of all substances to mix with water as a cooling drink after exercise, is the pure or essential acid of tartar. This affords a cooling and refreshing beverage, without relaxing the bowels like lemonade.—*Willich's Lectures on Diet and Regimen*, p. 465.

† A gentleman who lived at Hackney, near London, walked in every morning to set his watch at the Horse Guards. By having even that trifling object to accomplish, the exercise he took was doubly beneficial.

CONCLUSION.

I have thus brought to a conclusion the mass of matter collected on the subject of exercise*. Various circumstances have induced me to dwell upon it at greater length than I had originally intended. The more I advanced in the inquiry, the more important it seemed to be; and, of all the points connected with the preservation of health, it was the one to which the least justice had hitherto been done by any individual author; the greater, therefore, was the benefit that might be expected from the investigation.

It was the more necessary to enlarge on the head of exercise, as many physicians have paid infinitely less attention to it, than such a subject merits. Of this there cannot be a stronger instance, than in the case of the celebrated Darwin, who, in his *Zoonomia*, or Laws of Organic Life, containing a catalogue of diseases, and the methods of cure, has only dedicated a few sentences to the subject of exercise†.

On the whole, it seemed to me peculiarly essential to dwell on the advantages of exercise, and to explain all its various kinds; because, if persons could but be persuaded of the benefits resulting from it, not only for the preservation of health, but when taken early, in the cure of disease, they would be more inclined to give it a fair trial, and, above all, to persevere in it. The moderns, however, have, unfortunately, in a great measure, lost those high ideas of the utility of exercise, which the ancients so justly entertained.

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* The result of some extensive inquiries regarding athletic exercises, will be given in the Appendix.

† See Darwin's Zoonomia, vol. ii. p. 690.

CHAP. VI.

ON SLEEP.

IT is certainly one of the most extraordinary circumstances connected with the state of human nature, that the same being, who at one time is lively, active, and full of thought, should, at another, become in a manner deprived of life, his eyelids closed, his limbs torpid, and with hardly any symptom of animation remaining. It is natural to inquire, why so many hours of life are thus devoted to inaction; what useful purposes can be answered by this daily transition from activity to profound repose; and why man is exposed to the dangers attendant on sleep, during which period he lies in a helpless state, liable to be destroyed by the meanest and most despicable enemy?

How sleep is produced, or what are the immediate or remote causes thereof, cannot easily be explained; and as it is not necessary, in a work of a popular nature, to enter into such abstruse disquisitions*, it is therefore proposed, without any farther introductory observations, to proceed to consider the effects of sleep, and the advantages resulting from it, under the following general heads: 1. By sleep, the vital energy is renewed, which had been exhausted by former exertions. 2. The process of assimilation or nourishment goes on more perfectly. 3. The body attains its proper growth. 4. Much acrid matter is expelled through the medium of perspiration. 5. The cure of disease, and restoration of health, are in many cases promoted. 6. The vigour of the mental faculties is renewed. 7. The extension of life is advanced; and, 8. An important addition is made to the pleasures of our existence.

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* Those who may be desirous of entering into those philosophical discussions, may consult Haller, Darwin, and Garnett, by whom the phenomena of sleep are explained, perhaps as fully as the nature of the subject will admit of. Garnett, in particular observes, that when we have been engaged in any exertion, either mental or corporeal, for some hours only, we find ourselves languid and fatigued, and unfit to pursue our labours much longer. If, in this state, several of the exciting powers are withdrawn, particularly light and noise; and if we are laid in a posture which does not require much muscular exertion, we soon fall into that state which nature intended for the accumulation of excitability, and which we call *sleep*. This is the method which nature has provided to repair the exhausted constitution, and restore the vital energy. Without its refreshing aid, our worn-out habits would scarcely be able to drag on a few days, or at most a few weeks, before the vital spring would be quite run down. How properly, therefore, has our great poet called sleep "the chief nourisher in life's feast."—*Garnett's Zoonomia*, p. 191.

1. *Sleep renews the vital Energy.*—The fibres of the body cannot be acted upon unless they are in an irritable state. Where that irritability, or power of being excited, does not exist, they are inert and lifeless. During the day that irritability is exhausted by light, heat, sound, and, above all, by bodily exercise and mental exertion. When exhaustion takes place, we should endeavour to repair the loss, by retiring to a situation where, unmolested by light, heat, or sound, we may lie recumbent, without bodily motion, mental agitation, or any sensation either of pleasure or pain, until the irritable principle is again accumulated, and nature restores by sleep, that vital energy which the body had lost by its former exertions[*].

2. *Promotes Assimilation and Nourishment.*—The process of assimilation, as Lord Bacon observes, is principally accomplished by sleep. When we are awake, this nice and delicate operation cannot be so well carried on, because the incessant action of the body and mind, being always partial and irregular, prevents the equal distribution of the blood to all parts alike. In sleep, when it is quiet and natural, all the muscles of the body, that is, all active powers which are subject to our will, are lulled to rest, composed and relaxed into a temporary kind of torpor, that leaves not the least obstruction or hindrance to the blood being transmitted to every atom of the frame; the pulse is then slower and more equal, the respiration deeper and more regular, and the same degree of vital warmth is diffused alike through every part, so that the extremities are equally warm with the heart. During such a state of comfortable repose, the nutritive particles circulated by the blood, can certainly more easily attach themselves to the fibres of the body[†].

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[*] See Townsend's Guide to Health, vol. ii. p. 71; and Garnett's Lectures on Zoonomia, p. 191.

[†] Adair's Medical Cautions, p. 418. During sleep, those classes of motion which are more immediately necessary to life, as respiration, perspiration, the circulation of the blood, and those connected with digestion and nutrition, continue without interruption. Hence, though man in his sleeping state is a much less perfect animal than in his waking hours; and though he continues more than one-third of his life in this irrational state, yet is the wisdom of the Author of Nature manifested even in this seeming imperfection of his work.—See Darwin's Zoonomia, vol. i. p. 199.

3. *Promotes Growth.*—The necessary consequence of the body receiving nourishment during sleep is, that growth also must be thereby promoted. It has been ascertained by experiment, that young plants grow in the night time, which is generally their time of sleep; and there is every reason to believe that young animals follow the same rule. Hence, indeed, it is, that more sleep is necessary for children than for grown people; and, in general, it has been remarked, that a person is considerably taller when he rises in the morning, refreshed with sound sleep, than when he goes to bed at night, exhausted by the labours of the day. During sleep, also, there is a manifest relaxation of the fibres, and the body becomes more plump, so that any ligatures, if close, are apt to become painful; and on that account, many persons find it advisable to loosen the collar, or any tight part of their dress, when they go to rest*.

4. *Promotes Perspiration.*—In sleep, all the voluntary motions which are of an exhausting nature cease, but those that are vital and involuntary, which, instead of being exhausting, serve to recruit our strength, continue in full force: these are, the motion of the alimentary canal, on which nutrition depends; the motion of the heart, which distributes the blood to every part of the animated frame; respiration, which supplies the pabulum of life; and perspiration, by which the acrid matter in the body is expelled. Indeed, during sleep, nothing passes through the pores of a healthy person, but what is thoroughly digested, and fitted to be thrown off†.

The experiments of Sanctorius have fully demonstrated the superior efficacy of undisturbed sleep, in promoting the important secretion of perspiration; insomuch, that a person sleeping healthfully, and without any unnatural means to promote it, will, in a given space of time, as seven hours, perspire, insensibly, twice as much as one awake. Undisturbed sleep is so great a promoter of perspiration, that in the space of seven hours, from forty to fifty ounces of concocted perspirable matter are commonly expelled out of the body[*].

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* Collingnon's Inquiry into the Structure of the Human Body, p. 25. It is observed by Dr. Rush, of the woodmen in America, a class of people who pass many months together in the woods, occupied in hunting, that some of the youthful persons, who affect particular hardiness, lie in their usual clothes, without any alteration, all night. But of this practice they soon experience the bad consequences, and find themselves obliged to conform to the practice of the older and more experienced hunters, who make a point of loosening all the ligatures of their dress when they lie down to sleep.

† Townsend's Guide to Health, vol. ii. p. 71.

5. *Promotes the Cure of Diseases.*—In many diseases, securing sound repose ought to be a principal object with every physician. It is often a decisive symptom of recovery; and indeed many diseases cannot be cured, if the necessary rest be wanting. Since the days of Hippocrates, sleep has been accounted a most desirable and welcome guest in fevers, diminishing the rapid motion of the blood, and rendering the body cooler. Sleep is also of great advantage in checking extraordinary evacuation: hence its utility in diarrhœas and bloody fluxes. The comfort which sleep affords to persons afflicted with gouty complaints, pleurisies, and consumptions, need not be dwelt upon; and in deliriums and frenzies, it is certainly the most effectual means of restoration. On the other hand, in asthmas, dropsies, and paralytic disorders, it is not beneficial, beyond what is necessary for the restoration of nature[†].

For the recovery of health after sickness, it is indispensibly necessary to attend to regularity of hours, as well as the quantity of sleep. That balmy repose, which suspends the distressful sensations subsequent to ill health, can only be obtained, by habitually appropriating those hours to sleep, which nature has pointed out as the best calculated for that purpose[‡].

6. *Restores the Vigour of the Mental Faculties.*—Intense thought very speedily consumes the nervous power; and it requires longer sleep to recruit the strength, and replenish the spirits, when wasted by study, than even by severe labour[§]. By sleep also, those violent passions, by which the frame is so much agitated and exhausted, are appeased; and after a refreshing sleep, we can reflect on our disquietudes with a calm mind, and again reconcile ourselves to the troubles of life[‖].

7. *Contributes to the Prolongation of Life.*—Among the marks and symptoms of longevity, given us by the famous Cardan, that of being naturally a long and sound sleeper, is considered to be one of the surest indications[¶]. This

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[*] See Medicina Statica, sect. 4, Aph. 1, 2.

[†] Strother's Essay on Health, p. 370, &c.

[‡] Adair's Medical Cautions, p, 417.

[§] Harper's Economy of Health, p. 20.

[‖] Willich's Lectures, p. 487.

[¶] There are, however, exceptions to this rule, and one in particular, the authenticity of which may be depended upon, being transmitted to me, by an intelligent friend, (John Gordon, Esq. of Swiney, in the county of Caithmay be owing to the physical effects of sleep, which retards all the vital movements, collects the vital power, and restores what has been lost in the course of the preceding day. Indeed, if great watchfulness, by accelerating consumption, abridges life, a proper quantity of repose must tend to its prolongation*.

8. *Increases the Pleasures of our Existence.*—The continual change from profound sleep to active energy, is not only salutary, but when each is confined within its proper bounds, adds to the pleasure of life†. Every morning we enter into a new scene with renovated strength and delight; whereas, were there no interval from action, life, with the common cares attached to it, would become insipid. Hence the celebrated Kant has justly observed,—"Take from man hope and sleep, and you will make him the most wretched being upon earth." How absurdly then do those reason, who imagine, that by taking as little sleep as possible, they prolong their existence. They may spend in a given period, (say sixty years), *more hours with their eyes open*, but they will never enjoy *life*, in the proper sense of that word, nor that freshness and energy of mind, which are the certain consequences of sound and sufficient sleep, and which stamp a like character on all our undertakings and actions‡.

Let us now briefly consider,—1. The number of hours necessary for sleep; 2. The period best calculated for that purpose; 3. The nature of the room in which repose should be taken; 4. The sort of bed or couch; 5. The dress or clothing to be used on that occasion; 6. The proper posture for sleep; 7. The circumstances by which sleep can be disturbed or prevented; 8. The means of promoting sleep when wanted; 9. The propriety of sleeping in the day-time, or after dinner; and, 10. General rules respecting sleep; more especially those connected with infancy, youth, manhood, sickness, and old age.

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ties). In a letter written to me by that gentleman, in December, 1802, he gives an account of James Mackay of Skerray, who died in Strathnaver in the year 1797, aged ninety-one. He was a strong robust man, about five feet six or seven inches in height. He was of a very cheerful disposition, and possessed a singular, neat, and concise species of wit. He was remarkable for the small quantity of sleep he required; and it is certain, that, upon an average, during the whole year, he did not sleep above four hours in the twenty-four. His constitution was so strong and hardy, that neither wet nor any thing else affected him.

* Hufeland's Art of Prolonging Life, vol. ii. p. 196.

† See Mackenzie's History of Health, p. 383.

‡ Hufeland's Art of Prolonging Life, vol ii. p. 195.

he procured an alarum, which awakened him next morning at seven, near an hour earlier than he had risen before; yet he lay awake again at night. The next morning he rose at six; but, notwithstanding this, he lay awake the second night. The third morning, he rose at five; but, nevertheless, lay awake the third night. The fourth morning, he rose at four; and, lying awake no more, he, for a period of above sixty years, continued the same practice; and, taking the year round, he never lay awake for a quarter of an hour together, in a month. He adds, that, by the same experiment, (rising earlier and earlier every morning), any one man may find out how much sleep he really wants[*].

An old Latin proverb inculcates the necessity of seven hours' sleep in the four-and-twenty—

> Septem horas dormisse, sat est juvenique senique.

But it is certainly wrong to apply the same rule to the young and to the old.

Cadogan's maxim is, not to lie in bed above seven hours in summer, and eight in winter[†].

Willich proposes, as the best means of spending the winter, in good health, and in useful labour, to go to bed at eight o'clock, and to rise at three or four o'clock in the morning[‡]; and such a plan, I understand, is not unusual at some foreign universities. Custom may reconcile us to many things; but I have no doubt of the superior healthiness, in the winter-time, of rising by daylight, and using candlelight at the close of the day, than rising by candlelight, and using it for several hours before daylight approaches, by which the eyes must be greatly affected, and ultimately worn out.

On the whole, it is evident, that different ages and constitutions require different measures of sleep. From six to eight hours may be sufficient for youth or manhood, when the individual is strong and healthy; and from eight to nine may be allotted to infancy and old age. The infirm ought not to be limited even to these hours, but ought to be indulged in such a measure of sleep, as they find by experience necessary for refreshment[§].

It is proper to add, that nothing is more pernicious, than too much of sleep. It brings on a sluggishness, and dulness of all the animal functions, and materially tends to weaken the whole body. It blunts and destroys the senses, and renders both the body and mind unfit for action. From the slowness of the circulation which it occasions, there necessarily follows great corpulency, a bloated habit of body, and a tendency to dropsy, lethargy, apoplexy, and other disorders. Hence *Galen* calls sleep *the brother of death*; and says, that nothing is more pernicious, where it is carried to excess *.

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[*] See the Duty and Advantage of Early Rising; a Sermon on Ephesians, ch. i. ver. 16, by John Wesley.

[†] Dissertation on the Gout, p. 94.

[‡] Willich's Lectures on Diet and Regimen, p. 489.

Mackenzie's History of Health, p. 383.

Wesley also attributes those nervous disorders, which have of late years become so frequent, to the custom of lying too long in bed. By *soaking*, as it is emphatically called, so long between warm sheets, the flesh is, as it were, parboiled, and becomes soft and flabby. He relates the case of a young person, who was completely cured of a train of nervous disorders, by early rising, accompanied with cold bathing, and moderate exercise. Wesley adds, that lying too long in bed occasions weakness of sight; and that, though, when young, his own sight was remarkably weak, yet, as he grew old, it became stronger, owing to his practice of early rising.

Sect. II. *The Time proper for Repose.*

The night is evidently the proper time for sleep; and, before the invention of artificial light, necessity enforced the rule of going to bed with the sun, and rising when that luminary again made its appearance. It is universally admitted, that sleep ought to be taken when the sun is down; but is a rule that would not be at all calculated for every climate, to be in bed during the whole time the sun is invisible. For instance, at Edinburgh, where this work is composed, on the 15th of January, the sun sets at 45 minutes after three in the evening, and rises 15 minutes after eight in the morning, making a space of 16½ hours of night. On the other hand, on the 19th of May, the sun rises at 45 minutes after three, and sets at 15 minutes after eight, making a period of daylight of a similar extent. Hence, such a rule can only be calculated for climates where the days and nights are more equal and regular[*].

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* Valangin on Diet, p. 291. In p. 294, this intelligent author relates the case of a young man, who, in consequence of too much sleep, and too little exercise, died of an apoplectic fit, at the age of 23; and Boerhaave mentions the case of a physician, who, by too much sleep, lost his intellects, and perished in an hospital.—See Townsend's Guide to Health, vol. ii. p. 77.

The advantage of sleeping in the night, instead of the day, is strongly proved by an experiment made by two colonels of horse in the French army, who had much disputed which period of the day was fittest for marching and for repose. As it was an interesting subject, in a military point of view, to have it ascertained, they obtained leave from the commanding officer to try the experiment. One of them, although it was in the heat of summer, marched in the day, and rested at night, and arrived at the end of a march of 600 miles, without the loss of either men or horses; but the other, who thought it would be less fatiguing to march in the cool of the evening, and part of the night, than in the heat of the day, at the end of the same march, had lost most of his horses, and some of his men[†].

Nature certainly intended exercise for the day, and rest for the night. As soon as the sun quits our part of the globe, and the atmosphere we breathe in is divested of its enlivening rays, our nerves and fibres become relaxed, our muscles lose somewhat of their contracting force, and we find, as it were, a natural propensity to rest. But if, running counter to the laws of nature, whether by exercise or rioting, we keep up, during night, the contractions of our voluntary muscles, and the tensions of our nerves and fibres, at a time when they should be relaxed, and endeavour to relax them in the day time, when they should be contracted, we disturb the whole economy of our bodies, by which health must ultimately be destroyed. The young are thence apt to fall into consumptions, hectic fevers, or other acute disorders, whilst those advanced in years become victims to the more lasting torments of a chronical disease[‡].

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[*] It is impossible to lay it down as a constant rule, to labour during the day, and sleep during the night; for if that plan were adopted, such is the variation of the different seasons of the year, we should be always changing the plan, and would observe no regularity.—*[illegible] Essay on Health*, p. 339.

[†] Willich on Diet, p. [illegible]. He adds, that in order to prove the advantage of sleeping in the night, and reserving the day for labour and action, we need only compare the looks and the healthy state of people in the country, who follow that plan, with those of the inhabitants of towns, who keep awake till midnight, and pass a proportionable part of next day in sleep, and who are always weak, pale, and often [illegible]. Many persons allege, that by going to bed at regular hours, they must exclude themselves from all fashionable society. But, as [illegible] justly observes, they have the alternative, either to be fashionable and [illegible], or out of fashion and in health.—*[illegible]*, p. 41[illegible].

[‡] Williams's Advice to People afflicted with Gout, p. [illegible]. The absence

The plan of going to bed early, and rising betimes, has been called the golden rule for the attainment of health and long life, and a maxim which supersedes a variety of other precepts[*]. It is sanctioned by various proverbial expressions[†]; and it is said, that when old people have been examined, regarding the causes of their long life, they uniformly agreed in one particular, that they went to bed early, and rose early. Without being an advocate for what are called fashionable hours, which are carried to so preposterous an excess, some doubts may be entertained regarding the propriety of carrying the opposite system to too great a height. In ancient times, when people depended almost entirely on the sun for light, they were under the necessity of rising with that luminary, and of going to bed when it disappeared. Hence, a prejudice arose in favour of that practice; but the case is greatly altered, since the means of obtaining artificial light, to so great an extent, have been discovered. I question much, whether the morning air is so wholesome as many imagine. The sun must necessarily extract from the earth, when it first appears, a variety of vapours[‡], which strong constitutions may withstand, but which must be injurious to weak ones: and even in large towns, it is some time before the morning fogs are dissipated. Late rising, therefore, cannot be

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of the sun, and that revolution in the atmosphere with which it is connected, certainly has a considerable effect upon the body, and any pernicious effect is best obviated by remaining during that period in repose. Those who follow a different system, by converting the day into night, and night into day, generally suffer severely for their imprudence.

Another circumstance to be considered is, that by the custom of sitting up late at night, the eyes suffer severely, day light being much more favourable to those delicate organs, than any artificial light whatsoever.

[*] Buchan's Domestic Medicine, p. 89.

[†] For instance,—*surgere dilucolo saluberrimum est,*—or, to rise betimes is most conducive to health; also the droggrel rhymes so often repeated,

Early to bed, and early to rise,
Makes a man healthy, wealthy, wise.

Dr. Franklin has written a most ingenious essay, pointing out the advantages of early rising, *with a view to economy*. It is called "*An Economical Project.*" He makes a calculation of the saving that might be made in the city of Paris alone, *by using sunshine instead of candles*. He estimates that saving at 96,000,000 of French livres, or 4,000,000*l.* sterling. This paper originally appeared in one of the Paris papers, in the year 1784, and is translated into English, and printed with his other essays.

[‡] Dr. Lind states, that a clergyman in the Wolds of Essex, informed him, that early risers were the shortest livers; probably because exposed to unwholesome morning fogs. Dr. A. P. Buchan, on the other hand, observes, that he can perceive no reason why the dews of the morning should be considered as more unhealthy than the fogs and vapours of the evening. Pure moisture is not unwholesome.

approved of; but very early rising, during the winter months, is not probably so essential to health, as is commonly imagined. The great point is *regularity of hours*; and provided a proper proportion of sleep be taken, namely, from six to eight hours, it is of little consequence whether you go to bed at ten, eleven, or even twelve o'clock, though a later hour cannot be advisable.

On the whole, moderation in this, as well as in every other respect, ought to be observed. One may rise too early for health, as well as too late, and persons who live in the world must, in some degree, accommodate them-to its usages†.

SECT. III. *The Bed-Chamber.*

As the bed-chamber is a place in which we pass a large portion of our lives, we should pay greater attention to it than is usually done. On this branch of the subject, the following particulars merit attention. 1. The situation of the bed-room. 2. Its size. 3. The mode of ventilating it. 4. The temperature. 5. The fire-place; and, 6. Miscellaneous articles.

1. A bed-chamber ought not to be situated on the ground-floor; and an elevated apartment is particularly recommended, by Tissot, to literary and sedentary people: at the same time, a room on the ground-floor may not be injurious, with a gravelly soil; and in a dry situation. Some recommend, for the sake of coolness, its fronting the north; but others think it better, that it should be exposed to the early rays of the sun.

2. Our sleeping apartments should be airy, large, and lofty, and not small rooms or closets. Nothing can be more imprudent or absurd, than the conduct of those who having splendid houses, prefer to sleep in small apartments. The more airy a bed-room is, the better for health.

3. A bed-chamber ought to be well ventilated in the day time, as it is principally occupied in the night, when all doors and windows are shut. The windows should be kept

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* Hume observes, that it is hard to tell, why, all over the world, as the age becomes more luxurious, the hours become later. Is it the crowd of amusements that push on the hours gradually; or, are the people of fashion better pleased with the secrecy and silence of nocturnal hours, when the industrious vulgar are all gone to rest? In rude ages, men have few amusements or occupations, but what day-light affords them.—*Hume's History of England*, vol. iv. p. 401.

open, as much as the season will admit of, during the day; and sleep will probably be more beneficial, in proportion as that rule is practised*. Indeed, nothing is more material, not only for invalids, but for persons in health, than the admission of a free circulation of air into their bed-chambers, by various ways, in different degrees, according to circumstances†.

One of the best means of introducing fresh air into a house, or purifying the air of any particular apartment, is by means of ventilators. These were invented by the celebrated Dr. Hales. This excellent contrivance consists of nothing but of small moveable wheels, made of brass or sheet iron, which are applied to some part of the window panes, and set in motion by the pressure of the external air. But instead of using ventilators, Dr. Adair recommends, that the casements of all public rooms, and indeed of private houses, shall be constructed, so that the upper division shall slide down, and that a certain portion of them, according as the room is more or less crowded, be at least occasionally kept open.

It is proper, however, to observe‡, that though pure air is so necessary to health, yet, that great and sudden ventilation is dangerous. Keeping open, therefore, the windows of any bed-room during the night, ought never to be attempted, but with the greatest caution, unless when a person has been gradually accustomed to such a practice§.

4. It is imprudent to sleep in a very warm place, as it

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* In towns, this rule is not to be carried to the same extent as in the country, where the air is purer.

† Dr. Adair says, that this may be gradually effected in the following manner: during the warm close weather of the summer, or autumnal months, the chamber door may be left open for a few nights, afterwards a part of the sash may be left open, but the current of air intercepted by the shutter; and as the person becomes more habituated to fresh air, the shutter also may be left open, and the current of air prevented, by dropping a window-curtain before it.

In the colder months, a window in an adjoining apartment may be left open, also a door of communication, opening or closing the shutter according as the wind does or does not blow directly from that quarter. Chimney boards, as very great impediments to a free circulation, ought rarely to be admitted into any apartment, more especially into a bed-room. They are necessary, however, where smoke comes down the chimney from other vents.

‡ See Adair's Medical Cautions, p. 62, where a case is described, which strongly tends to prove the justness of these observations. Some recommend admitting fresh air by means of Venetian blinds. This is only calculated for very hot climates.

§ In Valangin's Treatise on Diet, p. 287, there is an instance of a young lady, of beauty, fortune, and great merit, on the eve of being married, who died of an inflammatory sore throat, which she caught, in consequence of a window in her bed-room being left open by mistake, in the heat of summer.

occasions faintness, and relaxes too much the whole system. In such a case, the person lies in a bath of vapours, which the great heat causes to exhale from his own body*.

In regard to warmth, the temperature of a sitting-room should not exceed 60° of Fahrenheit's thermometer; but that of a bed-room ought to be about 50°, as the medium temperature of our climate is between 50° and 55°.

5. Unless there is any apprehension of damp, a bed-room, more especially if small, should rarely have a fire in it, as it has a tendency to vitiate the air, often fills the atmosphere with dust or ashes, and sometimes may be the means of setting the room, and indeed the house itself in a blaze.

6. Those who live in hot countries, ought to be very particular regarding the place they sleep in. The apartment should be dark, shaded from the rays of the sun, or the light of the moon, temperate as to heat and cold, and rather inclined to coolness than heat.

It is a good rule for those who are obliged, on account of business, to spend the day in close towns, to sleep, if possible in the country. Breathing free air, in the night-time will, in some measure, make up for the want of it through the day. This practice would have a greater effect in preserving the health of those who reside in cities, than is commonly imagined.

It is hardly necessary to observe, that damp bed-rooms ought to be particularly avoided; and that the putrid air which they often contain, must be in the highest degree noxious.

Sect. IV. *Bed, or Couch.*

The progress of improvement, in the article of beds, or couches for repose, may be worth tracing, as a curious object of inquiry.

In the poems of the celebrated Ossian, the original mode of sleeping, when men were easily accommodated with a situation for repose, is thus described:

> Connal lay by the sounding stream,
> Beneath a leafless oak.
> Upon a moss-clad stone
> The chief of heroes reclined his head†.

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* Valangin on Diet, p. 285.

† This is taken from the new translation of Fingal, drawn up by the Reverend Thomas Ross, which, it is hoped, will soon be published, as

When men began to shelter themselves in caves or houses, it would be natural to sleep upon heath, grass, leaves, or straw, spread upon the ground, which was the first step to improvement.

In the houses of the Russian peasantry, there are no beds, but broad benches, on which they sit in the day-time, and sleep all night. This is an improvement from the low floor.

In England and in Scotland, during the feudal period of our history, the proprietors of land lived in castles, which were not always accommodated with a number of rooms; and where it was often necessary for the greater number of the inhabitants to sleep together, in the great hall, on straw, brought in for that purpose, and which was swept away next morning*.

It must have required a great deal of consideration, before what is called a bed, or a place solely appropriated for sleep, was introduced; and at first it probably consisted of nothing but the frame or bed-stead, without top or curtains, and covered with skins, straw, or heath.

The next improvement would be, what are called *box-beds*, still common in many parts of Scotland; the top and the sides of which, and even the door, being of timber, they would be well calculated for houses, which were then more pervious to the weather, than they are at present.

The bed, according to the present fashion, mounted on pedestals, with a cover above, and surrounded with curtains, that could either be opened or shut, was derived from the East†, and thence gradually introduced,

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is infinitely superior to the version given by Macpherson, and more likely to give to the world a just idea of the genuine excellencies of the Celtic bard.

* From the following account, given by Hollinshed, we may judge of the ancient mode of sleeping in England.—Our fathers, and we ourselves, have lain full often upon straw pallettes, covered only with a sheet, under coverlets made of dagswain or hoperlots, (I use their own terms), *and a good round log under their head instead of a bolster*. If it were so, that the father or the good man of the house had a mattrass or a flock bed, and thereto a sack of chaff to rest his head upon, he thought himself to be as well lodged as the lord of the town. So well were they contented.—Pillows, said they, were thought meet only for women in child bed. As for servants, if they had any sheet above them, it was well; for seldom they had any under their bodies, to keep them from the prickling straws, that ran oft through the canvas, and razed their hardened hides.—See Hume's History of England, vol. iv. notes, p. 462.

† The Greek beds were composed of girth bottoms, ornamented with quilts, coverlets, and probably with some sort of bolsters. There do not appear to have been any pavilions or testers; nor were curtains anciently

first into the southern, and then to the northern parts of Europe*.

The climax of luxury, in regard to this article of furniture, was the pensile, or suspended beds of Asclepiades, which have already been taken notice of in the preceding chapter, and by which, if necessary, the person might be rocked to sleep.

Another improvement, recommended by Dr. Franklin to those who can afford so great a luxury, is to have two beds near to each other; and if they wake in a hot bed, to rise, and go into a cool one. Such shifting of beds, would also be of great service to persons ill of a fever, as it refreshes, and frequently procures sleep. A very large bed, that will admit a removal so distant from the first situation, as to be perfectly cool, may, in some degree, answer the same end.

The subject of the bed or couch may be explained under the following heads: 1. The nature of the feather-bed and bolster. 2. The height thereof. 3. The bed-clothes. 4. The curtains. 5. Miscellaneous remarks.

1. The materials on which any individual sleeps, is an important consideration. The skins of animals destroyed in the chase, would probably be the first article that hunters would think of. Rushes, straw, and heath, would naturally occur to husbandmen, and those who resided in the country; and are still general in many countries, as France and Italy. In cold countries, where warmth is necessary, feathers are employed. But, on the whole, the invention of what are called hair mattrasses, is superior to every other, not overheating and relaxing the body, as feathers are apt to do†. They are particularly calculated for camp-beds, not being so apt to become damp.

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used in Greece. Homer makes no mention of them. They undressed when they went to bed. Their bedsteads, even in the time of Homer, were ornamented with gold, silver, and ivory. In the army, the Greeks lay upon skins spread upon the ground; they covered themselves with carpets, or other stuffs, which served for blankets; they afterwards had coverlets put above all.— *Goguet's Origin of Laws*, vol. iii. p. [illegible].

* Of these beds, there are three principal sorts, 1. The English; 2. The French; and, 3. The *Polonaise*, with a dome top, calculated for state. I have seen abroad an excellent sort of bed. It was merely a couch, without a top, and the curtains were at three feet distance, making an [illegible]. The English bed might be much improved, by having the top separated from the rest of the bed, and a clear space between it and the curtains, for the admission of fresh air.

† The use of feather beds, except in cold [illegible] and seasons, is highly injurious. It is certainly [illegible] in many [illegible], and some are actually occasioned by that pernicious practice. [illegible] the perspired vapours thrown out of the body; and [illegible] they are frequently

The observations of Locke upon this subject are extremely judicious. He remarks, that the bed should be hard for strengthening the parts; whereas, being buried every night in feathers, melts and dissolves the body, is often the cause of weakness, and the forerunner of an early grave. Warmth about the kidneys, the necessary consequence of sleeping on down beds, is very apt to breed the stone, and to occasion other disorders*.

But though mattrasses made of hair or straw ought to be preferred in hot countries, and in warm seasons of the year; yet in northern climates, where they are much accustomed to use feather-beds in winter, bad consequences have arisen by exchanging them for mattrasses during the cold season of the year; and it has been found very apt to call forth gouty or rheumatic affections in those who have a tendency to such complaints.

In regard to the bolster, it should be well stuffed and elastic. Some recommend that it should be filled with feathers in winter, and with horse-hair in summer; but others contend, that it should be always stuffed with horse-hair, as it is proper to keep the head cool. The pillow should be so disposed, as to suit the usual manner you have adopted of placing your head, so as to be perfectly easy.

2. Several mattrasses or feather-beds are laid, one above the other, in order to raise the couch to the height that is required; but the modern fashion, by which it is necessary to ascend the bed *by steps*, is absurd and dangerous; and it must be attended with some hazard, ascending or descending, more especially for the aged, or for invalids.

3. It is highly improper for young people to sleep in beds overloaded with clothes. They heat the blood more than is consistent with health; and produce an immoderate and enervating perspiration, which still more weakens the organs, already relaxed by sleep†. But to old people, warm bed-clothes are highly proper and necessary, in order to preserve or increase their heat. From neglecting to attend to that circumstance in very cold countries, the aged have often been found dead in their beds in the morning,

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and carefully shaken, aired in the sun, and provided with a new covering, the noxious vapours thrown out of the body may be resorbed, to the great injury of the health. Indeed, such beds should be exposed every morning to the open air, before they are made up.

* Locke's Treatise on Education, sec. 22.

† Willich's Lectures on Diet and Regimen, p. 498.

after a cold night. Macklin, the player, when he got old, always slept in blankets, for the sake of warmth; and the late Dr. Chovet of Philadelphia, who lived to be 85, slept in a baize night-gown, under eight blankets and a coverlet, in a stove-room, many years before he died*.

In regard to bed-clothes:—the most comfortable discovery hitherto made, was the invention of sheets; by means of which, dress may be thrown off with comfort, and the body, almost in a state of nature, given up to repose: whilst by woollen coverings, or blankets, in number or thickness adequate to the warmth required, the body is kept in a proper and equal temperature. Nothing, however, has proved more injurious to health, than damp linen.

4. The use of curtains has been objected to; but they are in some degree necessary, to exclude the light, which, at least in the summer season, might discompose the slumbers at too early a period; and in winter they are useful, to exclude the cold.

The old custom, of warming the bed, deserves to be particularly reprobated, as it has a direct tendency to produce weakness and debility. It is still more dangerous, when done with a charcoal fire, the poisonous vapours of which must be highly pernicious.

With a view to health, it is desirable that beds, instead of being made up as soon as people rise out of them, should be turned down, and exposed to the fresh air from open windows for some time.

The bed should never be placed near a wall, more especially if there is any risk of its being damp, or in any country where lightning is frequent; for a flash of lightning, accidentally entering through the window, will take its direction along the walls, without touching any thing that is not close to them†. Beds shut up in close alcoves are extremely objectionable.

The greatest care ought to be taken to beat, and thoroughly to air any bed, in which sick persons have lain; and if any have died of contagious disorders, the beds in which they have lain ought to be buried or burnt, or washed with potash and boiling water‡.

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* Rush's Medical Inquiries, p. 317.

† Willich's Lectures on Diet and Regimen, p. 501.

‡ Faust's Catechism of Health, p. 82.

SECT. V. *On the Dress or Clothing.*

ORIGINALLY, people never thought of going to rest, but in their usual clothes; and it continues the practice in many parts of Asia, and other countries where the accommodation of beds is still in an imperfect state. Where blankets, however, are in use, excepting in the case of old people, the head and the neck are the only parts of the body which are usually clothed.

In regard to the head, it is much disputed whether it should be clothed warmly or coolly*. It was an old maxim, recommended for the preservation of health, to keep the head cool and the feet warm†. Notwithstanding of which, it is too prevalent a custom to sleep with warm night-caps. This certainly tends to make the head apt to catch cold on any sudden change of the atmosphere; and this unnatural warmth is particularly prejudicial to children‡. Some covering to the head is necessary during rest, to prevent the hair from being dishevelled; and the heads of old people may be defended by means of warm caps in the night, otherwise they must suffer from the cold.

In regard to clothing in general, it is certainly proper to be undressed to the shirt, when we go to bed, not only for the sake of cleanliness, but also that the body may be relieved from every pressure and incumbrance, and a free circulation of the blood promoted. The shirt collar should be loose, the wrist-bands open, the neckloths, if worn at all during sleep, should be tied as loosely as possible. Persons who are chilly in the lower extremities, or are liable to pains in the stomach, may sleep in woollen socks or short stockings, in cold weather§.

As to the neck, some are accustomed to lay aside their stocks or neckcloths when they go to bed. A contrary practice, however, is recommended by an intelligent correspondent, (the Chevalier Edelcrantz), to those who are liable to sore throats; that is, to use a thin collar of fleecy hosiery in the night, and somewhat thicker when the complaint returned, which was seldom the case[*].

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* Cleland, in his Institutes of Health, p. 3, says, that to sleep bareheaded, is a dangerous experiment; and contends, that it is necessary to keep the head warm, especially during sleep.

† The celebrated Kant strongly objects to the doctrine of keeping the feet warm. He thinks, on the contrary, that both the head and the feet should be kept cool, by which one becomes less liable to catch cold; and that the feet should be daily washed with cold, instead of tepid water. The feet, however, should be kept dry, unless where people are frequently accustomed to have them wet. The Russians think that the breast also should be kept cool. It is universally agreed, that the belly should be kept warm, more especially in cold weather. See Code of Longevity, vol. iii. p. 248.

‡ Willich's Lectures on Diet and Regimen, p. 270, 497.

§ Ibid. p. 497.

SECT. VI. *Posture.*

WHEN about to sleep, most animals choose a particular posture of body; and it certainly is a point that merits attention[†]. We should not lie in a forced or constrained posture, but almost horizontal, the head excepted, which ought to be a little raised[‡]. Nothing is more prejudicial than to lie in a manner half sitting. Sleep not on your back, *or in the posture of a dead man*, is a maxim attributed to Confucius. Hippocrates particularly condemns that posture, as likely to occasion the night-mare, the apoplexy, disorders of the kidneys, and other complaints. The opposite posture, on the stomach, is extremely injurious to the eyes, to the lungs, and to the bowels in general. The best position certainly is, to lie upon one side, the body straight, but the limbs bent, by which they are more at ease. When tired, our posture should favour those limbs which have been particularly exercised. Valangin recommends lying on the right side, when one goes first to bed, particularly when there is yet any food in the stomach; but, after the first nap, or when the stomach is empty, to lie a little on the left side, changing postures when necessary; and every time you become awake, stretching yourself in bed, to render the circulation of the blood freer[§].

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[*] Code of Longevity, vol. ii. Appen. p. 27.

[†] The camel places his head between his fore feet; the monkey, like man, lies on his side; most birds sleep with their head under one wing. The psittacus garrulus, (a species of parrot), hangs by one foot on the branch of a tree; and some spiders, and other insects, suspend themselves by their fore legs. Some horses never lie down but sleep standing; and even those accustomed to lie down, will sometimes sleep on their feet.—*Smellie's Philosophy of Natural History*, p. 402. Taken from Linnæus's work, Amœnitates Academica.

[‡] It is good to have the head higher than the rest of the body, lest the food, by rising too high in the stomach, should require a much longer time to be digested.

[§] Valangin on Diet, p. 268. Dr. Franklin recommends the limbs being placed, so as not to bear inconveniently hard upon one another, as for

The arms should be under the clothes in cold weather, or above them in warm; and care should be taken not to fold them round the head. It is imprudent to hide the head almost entirely under the bed-clothes.

We ought to sleep with our mouth shut. Besides other inconveniences attending a contrary practice, the teeth are likely to be injured by it; for the air continually passing in and out between them, hurts, and by degrees loosens them. This practice has a tendency also to make the mouth and throat too dry, which is always unpleasant, and in cold weather may occasion sore throats*.

Sleeping in a sitting posture should never be thought of, except for a short nap after a meal.

SECT. VII. *What prevents Sleep.*

THIS branch of the subject may be divided into two parts; 1. What prevents our going to sleep; and, 2. What may disturb it afterwards.

1. We may be prevented from sleeping, either by improper diet, and bad digestion, or by violent emotions of the mind, or by occasional circumstances.

The drinking of tea, coffee, and any thin or weak liquor, immediately before going to bed, will, with many people, retard sleep.

A full stomach occasions restless nights; and that difficulty of going to sleep, so often ascribed to the vapours, is generally owing to crudities, which are undigested, and not carried off by proper exercise†. Whatever disturbs good digestion must injure sleep.

The Chinese have paid very particular attention to the subject of sleep; and, among other maxims, strongly recommend, before we lie down, not to employ our thoughts with any circumstances that can shock the imagination, or leave impressions that may disturb our rest‡.

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instance, the joints of the ancles; for though a bad position may at first give but little pain, and be hardly noticed, yet a continuance will render it less tolerable, and the uneasiness may come on during sleep, and may disturb the imagination.

* See Hart's Diet of the Diseased, p. 337. He observes, at the same time, that when the mouth is open, vapours will be expelled by the breath, which have been accumulated in the stomach.

† Burton on the Non-naturals, p. 287.

‡ It is said, that one's own pillow is the best of counsellors; and it is certain, that where any particular point requires deep and serious reflection, half an

The Night-mare.—This affection, in general, is produced by indigestion, and by eating too much, and particularly of flesh meat at supper. It is likewise sometimes occasioned by having the head too low, or by lying, while asleep, on the back, and the bed-clothes, of course, pressing on the breast. From whatever cause the night-mare proceeds, it is uniformly accompanied with great terror, and a sense of suffocation. The sensations excited by this cause are always of an excruciating nature*.

Somnambulism.—Some people get up and walk about during sleep; nay, sometimes quit their bed-rooms, and expose themselves to great dangers. Many well authenticated instances are recorded of persons of that description; and, however incredible it may seem, to those who have not witnessed such scenes, there can be no doubt of their existence†.

SECT. VIII. *Means of promoting Sleep.*

AN intelligent author has observed, that sleep, "*tired nature's sweet restorer,*" cannot safely be dispensed with for any length of time. If it does not pay its accustomed visit, the whole frame of the unfortunate individual is thrown into disorder, his appetite ceases, his strength fails, his spirits become dejected, and he is reduced to a state of the utmost misery. It is often in vain that every means are hought of to induce repose; it is in vain that all light is xcluded, that all sounds are removed, that books of enterinment are read; the feverish body or the busy mind reses rest:

> "And in the calmest and the stillest night,
> "With all appliances and means to boot,
> "Denies it to a king‡."

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of health and innocence is sound and refreshing, and the dreams ng and delightful; whereas, a distempered body, and a polluted or bed mind, are haunted, during sleep, with dreams, impure, unpleasnd frightful.—*Encyclop. Brit.* voce *Dreams.*

mellie's Philosophy of Natural History, vol. ii. p. 403. Darwin ob- that great fatigue, with a full supper, and much wine, is apt to e this complaint. The remedies are,—the use of the bark; to take no supper; and to sleep on a hard bed, with the head raised. By dness of the bed, the patient will be apt to turn himself more fre-, and will not be liable to sleep too profoundly, or lie too long in sture. If it is necessary, he ought to be frequently awakened by an clock.—*Zoonomia*, vol. ii. p. 400.

Smellie's Philosophy of Natural History, p. 391, many instances are of persons of this description. See also Adair's Essay on Diet and , p. 75, for an extraordinary instance of somnambulism.

son's Medical Essays and Observations, Case vii. p. 292. It is

In the celebrated case of Lord Lyttelton, as narrated by Dr. Johnston his physician, the want of sleep seems to have occasioned his death; and Tissot proves, by a multitude of facts, that intense thought destroys an aptitude to sleep; and that it much imports studious characters to limit their learned labours to proper hours, to support their strength by intervals of exercise in the open air, and, above all others, to solicit sleep, by a seasonable dismissal of business and of care.

The various circumstances which contribute to sleep, are, 1. Air; 2. Labour, or exercise; 3. Diet; 4. Medicine; 5. Useful habits; 6. Resolution of mind; 7. Machinery; 8. Application of heat; 9. Application of cold; 10. Electricity; 11. Regularity of hours; and, 12. Miscellaneous circumstances.

1. Fresh air has a particular tendency to promote sleep; hence, people when travelling, not with too much rapidity, and with as much attention as circumstances will admit of to the regularity of their meals, generally sleep sound*.

2. A sufficient quantity of muscular exertion, greatly contributes to sleep; more especially when it does not exceed the powers of the individual: otherwise, there must be a too violent circulation of the blood, and sleep will be interrupted†.

3. Attention to diet is also necessary for procuring sleep. The stomach must not be oppressed, nor ought the powers

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said, that being placed on a couch, in a circulating machine, would promote sleep.

[*] A constant supply of fresh air, in a bed-chamber, as Dr. Franklin justly observes, is a great means of preserving health. It has been a great mistake, to sleep in rooms exactly closed, and in beds surrounded by curtains. No outward air, that may come in to you, is so unwholesome as the unchanged air, often breathed, of a close chamber. As boiling water does not grow hotter by longer boiling, if the particles that receive greater heat can escape; so living bodies do not putrify, if the particles as fast as they become putrid, can be thrown off. Nature expels them by the pores of the skin and lungs; and in a free open air, they are carried off, but in a close room, we receive them again and again, though they become more and more corrupt. Confined air, when saturated with perspirable matter, will not receive more, and that noxious matter must remain in our bodies and occasion diseases.

[†] One of the greatest advantages of exercise is, that it procures sleep. A rich man, stretched upon a bed of down, shall seek for rest, but in vain; sleep flies from him, and refuses to close his eye-lids, in the stillest night: whereas the poor man, who has laboured all day, only throws his wearied limbs upon the bed, and straight he sinks into a sweet and gentle sleep; a sleep that is sound and uninterrupted, the just recompense of all his toil.—*St. Chryst. Homil. 2. Popul. Antioch*; also *Burton on the Non-naturals*, p. 253.

of digestion to have too much to do. Above all, heavy suppers ought to be avoided; for, until the food taken is digested, it is in vain to think of sound or refreshing sleep. Some persons have accustomed themselves so much to take hot suppers, that they must be indulged in that respect; but the lighter they are, the better; and they should always be taken two or three hours before bed-time. Some herbs from the kitchen-garden, more particularly the cabbage-lettuce, are favourable to sleep. Sanctorius recommends garlic for that purpose, also marmalade made of quinces*.

4. Of all sedatives, opium is certainly the most sovereign remedy hitherto discovered; but, like other powerful medicines, when improperly administered, it becomes highly noxious to the human constitution†. It must occasionally be taken, however, when no other means of procuring rest is found to be effectual. It is also said, that narcotics, even outwardly applied, abate pain, and are favourable to repose.

5. A number of practices have been recommended, as likely to promote sleep; some to be observed before you go to bed, and some after.

There is not a better plan, than to walk up and down your parlour or bed-room some time before you go to bed. *After supper walk a mile, is an excellent rule, and may be observed in the house as well as out of it.* Walking about, before going to rest, particularly with pleasant companions, is infinitely better than lolling in a chair or couch; and certainly is a better preparation for repose. This maxim cannot be too often inculcated‡.

Listening to music, also, is a good preparation for repose, or reading any book, not too interesting, containing simple ideas, which may rather tire by their uniformity.

The Chinese recommend it as an important rule, to wash the mouth, and to rub the gums and teeth with a brush before going to bed. This gives the mouth and tongue an agreeable freshness; and, though the practice seems at first a little troublesome, you will soon become accustomed to it, will feel uncomfortable if it is omitted, more especially as it has a tendency to promote sound sleep.

It is also considered by them as a healthy custom, and tending to promote sleep, when a person is undressed, to rub smartly with the hand, or flesh-brush, the soles of the feet, and then to rub each toe separately; this greatly promotes insensible perspiration, and is an effectual method of preserving and repairing the vital and animal spirits[*]. Indeed, there is not a better rule, than to have both the arms and legs smartly rubbed with a flesh-brush, before you go to bed, and when you rise in the morning.

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* Medic. Stat. sect. iv. aphor. 60.

† Thornton's Philosophy of Medicine, vol. iv. p. 103.

‡ The celebrated Cato of Utica was accustomed to walk about after supper, before he endeavoured to settle himself to sleep.

Before going to bed, all pressure, from any article of dress, ought to be removed.

When in bed, some recommend sleeping on a pillow of hops, as an excellent mode of procuring sleep. This may be used occasionally, but would soon lose its effect.

It was formerly a custom, in the more remote parts of Scotland, to employ bards, to rehearse to great men the verses of distinguished poets; and, by these means, in some measure, the poems of the celebrated Ossian were so long preserved by oral tradition. It is sometimes a practice, when sleep cannot otherwise be obtained, to be read to until we fall asleep. But, on the whole, it is a very bad custom, and, when once begun, can hardly be got rid of. Besides, it must occasion dreaming, and disturb sleep; as the ideas thus obtained are likely to wander and float through the imagination during the night[†].

Boerhaave, on some occasions, in order to procure sleep for his patient, directed water to be placed in such a situation, that it was continually dropping on a brass pan.

> Fontesque lymphis obstrepunt manantibus,
> Somnos quod invitet leves.

Any thing that catches the attention, for instance soft music, or the Æolian harp, or any monotonous sound, as the murmuring of a rivulet, the humming of bees, the incessant sound or check of a clock or watch, will also promote sleep[‡].

If none of these practices will procure sleep, then try the effect of conning over some task that in childhood was apt to create it, or of counting from one to five hundred, or a thousand, or reciting any long passage, from any ancient or modern author. By these means, the attention is diverted from uneasy thoughts, and you are overtaken by sleep, in the midst of your efforts.

6. Much also may be effected by resolution and firmness

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[*] See the Art of Medicine among the Chinese.—Code of Longevity, vol. iii. p. 236.

[†] Hufeland's Art of Prolonging Life, vol. ii. p. 199.

[‡] Code of Longevity, vol. ii. Appendix, p. 46.

of mind. A great modern philosopher, finding it impossible to procure sleep at the accustomed hour, and suffering also from painful attacks, resembling cramps, summoned up his stoic principles, and, by directing his attention to some indifferent object, such as the history and writings of Cicero, not only got the better of the thoughts which kept him awake, but even his painful sensations soon became blunted, and were finally overcome by drowsiness; and this remedy, he adds, he could at all times repeat with success, whenever his sleep was interrupted by attacks of this sort[*].

7. Asclepiades, who rendered himself the delight of mankind, by his exquisite inventions, in improving and assisting the art of physic, among other measures for that purpose, recommended, as has been already observed, the plan of *pensile, or suspended beds*, by which the patient was rocked asleep[†].

The celebrated canal engineer, Brindley, often saw the experiment tried, of a man extending himself across the large stone of a corn-mill, and gradually falling asleep by the stone whirling round, before the stone had gained its full velocity. It would not be difficult to contrive circular beds or couches, that might be kept in motion for some time, on the same principle, and might answer the same purpose.

8. As disturbed or sleepless nights are very distressing, and often productive of disease, Dr. Adair recommends it, as an effectual remedy, to bathe the feet, in a narrow tub with handles, so deep as to reach the knees, gradually increasing the heat, by adding boiling water, till a gentle sweat breaks out; the legs must be wiped quite dry, and a pair of worsted stockings put on. He recommends this as the best means of restoring natural rest, and particularly beneficial to studious men, and to those who are subject to frequent attacks of nervous headachs, colicks, and rheumatic or gouty pains[‡]. This practice might also be of use to old people in cold weather.

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[*] See Kant on the Power of Resolution over Disease. Code of Longevity, vol. iii. p. 152. Hufeland, vol. ii. p. 199, also observes, that the cares and burden of the day, ought to be laid aside with one's clothes. None of them ought to be carried to bed with us; and, in this respect we may, by perseverance and firmness of mind, obtain a great power over the thoughts.

[†] Suspended cradles, or *cots*, are already to be seen in the shops of the upholsterer. The beds might be contrived, so as to rest on a frame, when rocking was not necessary, and to be raised up by ropes when it was.

[‡] Adair's Essay on Diet and Regimen, p. 74.

9. The application of cold is sometimes as necessary as that of heat. Going cool to bed is, in general, to be recommended, more especially to persons in perfect health. The celebrated Dr. Franklin had a custom of standing for a few minutes after he was undressed before he went into bed, and he believed that he thereby procured more refreshing sleep[*]. At other times, if he found himself restless, from feverish heat, or in a parched state of the body, he was accustomed to shake the bed-clothes repeatedly, to some height above the body, and even to get out of bed, and to take some turns about the room, till he became sufficiently cool. If the room be cold, both stockings and a dressing-gown should be put on, and on returning to bed, a new part of it should be occupied. This, however, is not a recent practice; for Fuller, in his Medicina Gymnastica, (the 5th edition of which was published *anno* 1718), mentions, that some hysteric people, who have lain half a night restless and disturbed, and without the least inclination to sleep, upon getting out of their beds, and walking a turn or two about the room, found themselves quite altered, and able, when they came to bed again, to sleep well[†].

10. Electricity is said to promote sleep; but it is only the gentler kind that tranquillizes the system. Many persons have slept much better at night when they have used an electric bath in the day-time; and those who complain of the want of sleep, should apply that bath, for a quarter of an hour, or longer, some time before they go to bed, until they get a habit of sleeping[‡].

11. It is a great point, to get into a regular habit of sleeping. Those who accustom themselves to sleep, and to

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[*] Adair's Essay on Diet and Regimen, p. 74. Dr. Franklin's rules for sleeping well, and having pleasant dreams, are, 1. To eat moderately; 2. To use thinner and more porous bed-clothes, which will suffer the perspirable matter more easily to pass through them; and, 3. If you are awakened by any accident, and cannot easily sleep again, get out of bed, beat up and turn your pillow, shake the bed-clothes well, with at least twenty shakes, then throw the bed open, and leave it to cool; in the mean while, walk about your chamber undressed, till your skin has had time to discharge its load, which it will do sooner, as the air may be drier and cooler. When you begin to feel the cold air unpleasant, then return to your bed, and you will soon fall asleep, and your sleep will be sweet and pleasant. If you are too indolent to get out of bed, you may, instead of it, lift up your bed-clothes with one arm and leg, so as to draw in a good deal of fresh air, and by letting them fall, force it out again. This, repeated twenty times, will so clear them of the perspirable matter they have imbibed, as to permit your sleeping for some time afterwards. But this latter method is not equal to the former.

[†] Fuller's Medicina Gymnastica, p. 84.

[‡] Struve's Asthenology, p. [illegible]

get up at a fixed hour, will generally be visited by sleep about the usual period. This habit also tends to render sleep much sounder[*].

12. In regard to miscellaneous particulars, the exclusion of light, the absence of noise, and attention to the best posture for sleeping, are principally to be recommended.

By an observance of these rules, as the circumstances of the case may render it necessary, sleep will be properly enjoyed, the strength of the body well renewed, and the faculties of the mind and body rendered active, at the morning of each day[†].

These hints may contain several particulars, seemingly of little importance; but, insignificant as they may appear, they ought not to be neglected, if they contribute to the preservation of health.

SECT. IX. *Of Sleeping in the Day-time, and more especially after Dinner.*

IN many southern climates, it is a common practice to take a nap, sometimes in the middle of the day, or at other times immediately after dinner, for they dine very early. Homer mentions, as a sign of his great age, that Nestor always slept a little after his meals. Galen allows it to old people[‡]. The Salernian school, however, strongly object to this custom; and, if it is at all indulged in, think the sleep should be short[*].

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[*] Darwin's Zoonomia, vol. i. p. 455.

[†] Turnbull's Medical Cautions, p. 131. Dr. Buchan of Percy-street, London, has furnished me with the following additional hints regarding the means of inducing sleep. Gently titillating the soles of the feet, will frequently induce sleep. Among the natives of India, I have been informed, it is customary, for every person who can afford the expence, to employ a servant, gently to tickle the soles of the feet, till sleep takes place. A particular description of this practice will be found in the Tooti Nameh. I have often in this country, advised the experiment to be tried, and with advantage, in cases of nervous irritability. Lord Bacon, in his Natural History, says, " It is received and confirmed by daily experience, that the soles of the feet have great affinity with the head: applications of hot powders to the feet, attenuate first, and after dry the rheum. Likewise pigeons bleeding, applied to the soles of the feet, ease the head: and soporiferous medicines applied unto them provoke sleep." No person can sleep with cold feet. This may be obviated, by applying bottles filled with hot water to the feet. I knew a gentleman, upwards of eighty, who, having frequently found his sleep prevented by coldness of his feet, procured a large and hard brush, on which he stood, and rubbed his feet for some minutes, previous to goiog to bed; and this he found a much more effectual means of preventing the sense of coldness, and of conciliating sleep, than the application of any thing actually hot.

[‡] Valangin on Diet, p. 280.

The friends to the custom of taking a nap after dinner, tell us, that the wholesomeness of that practice is dictated by nature, provided it be not carried too far, since all animals appear sleepy after meals[†]. It has been also urged, that numbers of persons, who have enjoyed perfect good health, have always been in the habit of sleeping an hour or two in the afternoon. Most of the religious orders in Spain follow that practice, and yet are not in worse health than laymen[‡].

Both Sanctorius and Lister recommended an hour's sleep after dinner, to those who have a weak digestion; and an instance is mentioned, by an intelligent physician, of a near relation he had, who slept after dinner for the last fifty years of his life, and died at the age of eighty-two[§].

But on the whole, sleeping after dinner is not to be recommended, unless where nature seems to require it; and even then, it should only be indulged in for a short time, and in a sitting posture, as that has a tendency to prevent its being carried to any excess[‖]. It is certainly apt to bring on apoplexies in cold climates, where animal food and soporiferous malt liquors are used in great quantities; and is likely to be highly injurious in plethoric habits.

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[*] Sit brevis, aut nullus, tibi somnus meridianus.

[†] Valangin on Diet, p. 282. Platerus, a famous physician, who lived above seventy years free from disease, was accustomed to take a nap after dinner, and recommended it to his patients.

[‡] Father Feyjoo's Rules for preserving Health, p. 89.

[§] See Adair's Medical Cautions, p. 417. But the Doctor recommends it as a most salutary expedient, never to take so much food as to create a propensity to sleep at that time of the day.

[‖] Mackenzie observes, that a man should forbear to sleep after dinner, or indeed at any other time of the day, in our cold climate, except where a long habit has rendered such a custom almost natural to him; or where extraordinary fatigue, or want of rest during the preceding night, obliges him to it; in which case, he should be well covered, to defend him against catching cold. Hist. of Health, p. 385. The head ought likewise to be laid high, and the body bent backwards, and a little turned to the left side, during an evening nap. Every thing that is likely to prevent the circulation of the blood, must be removed, otherwise violent headachs may be the consequence. The late celebrated John Hunter was an early riser; but he always slept half an hour after dinner, and was much displeased if disturbed. I am also informed, that, for the last thirty years of his life, he drank nothing but water.

SECT. X. *General Rules regarding Sleep.*

THIS branch of the subject may be considered under the following general heads; namely, rules regarding sleep: 1. In infancy and youth. 2. In manhood. 3. In sickness. 4. In old age; and, 5. Miscellaneous particulars.

1. *Infancy and Youth.*—The celebrated Locke has explained, at some length, his sentiments as to sleep, more especially the rules that should be observed regarding the sleep of children. He justly recommends their being permitted to sleep to their full satisfaction, as nothing contributes more to their health and growth*.

Children should, for some time, sleep on their backs, but as soon as they get teeth, and begin to live on more substantial diet, their bones and ligaments become stronger, they should be laid to sleep, sometimes on the one side, and sometimes on the other, that both may grow alike, and become equally strong.

The cradle in which a child is put, ought to be turned directly to that side of the room from which the light comes, otherwise he will be in danger of learning to squint†.

Weakly childen ought to be accustomed to a hard bed, and a slight covering, and the body will be thereby invigorated. It is particularly to be observed, that feather beds are more injurious to the health of children, than even of adults‡.

Sleep is so great a refreshment to children, that we see new-born infants, when they are well, are almost always asleep; but if their sleep is frequently interrupted, they soon become lean and emaciated, and lose their strength§.

2. *Manhood.*—All the observations in the former part of this chapter, are principally calculated for manhood, or middle age; it is therefore unnecessary to recapitulate any of them in this place.

3. *Sickness.*—Sleep is of infinite advantage to the sick; for it greatly repairs their strength, helps to concoct and expel the morbific matter, and eases their pains||.

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* Locke's Treatise on Education, sect. 21.

† The Nurse's Guide, with an Essay on preserving Health, p. 46.

‡ Faust's Catechism of Health, p. 81.

§ Valangin on Diet, p. 271.

|| Valangin on Diet, p. 272.

Invalids, whether from weakness or fatigue, often express an inclination to sleep for an hour during the day; and this indulgence may be granted them, if it is found that their sleep, during the night, is not thereby interrupted.

Many real or imaginary invalids lie long in bed in the morning, to make up for any deficiency of sleep in the night-time; but this ought not to be permitted, for the body must necessarily be enervated by long continuance in a hot and foul air. A little resolution will enable invalids to surmount this destructive habit. By rising early, and going to bed in due time, their sleep will become sound and refreshing, which otherwise they cannot expect.

Want of sleep is a most distressing, weakening, and dangerous symptom, in a multiplicity of diseases. The causes of morbid irritation, which produce and support this dreadful evil, are many and complicated; and it is of the utmost consequence, that the true cause should be ascertained. In no instance do ignorant practitioners err so much, or so frequently, as in cases of this kind*.

4. *Old Age.*—Sleep was intended to recruit nature, and to restore the wasted spirits. This is necessary to all persons, *but is most essential to the aged*, because they can least bear any waste or exhaustion, and they may indulge more in it than younger people, or those who are in the prime of life. In this respect, indeed, they may be considered as children a second time. Instead of eight hours, therefore, nine, and even ten may be allowed them, provided they sleep the whole time, and are not corpulent.

If, owing to any agitation of mind, a person advanced in years finds himself unable to sleep as well as usual, he ought, notwithstanding, to rise at his accustomed hour; and next evening let him take the warm bath, and a glass of wine extraordinary, and he will enjoy a sweet slumber, and will not suffer from his former watchfulness. This is a much better plan than lying in bed in the morning, to make up for last night's want of sleep, which may lead to a very pernicious habit, which it may be difficult to conquer.

By getting into a regular habit, in regard to hours, (which old people have no excuse for breaking through), life may be as much enjoyed in old age, as even in youth, and perhaps even more so; *but then it is necessary to attend to a number of minute circumstances*, which may be overlooked in the heyday of youth, but cannot be neglected in old age with impunity*.

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* Adair's Natural history of the Human Body and Mind, p. 53.

Persons advanced in years may sleep a little after dinner, that their heat, which is weak and feeble, being concentrated within, may enable them to perform their digestion better; but their afternoon's sleep ought not to be continued too long, for fear it should prevent their sleeping in the night, which is of much more advantage to them.

5. *Miscellaneous Rules.*—A Chinese philosopher, who had paid particular attention to the art of preserving health and long life, drew up a regular system for that purpose. Among the rules he has laid down, one of the most important is, not to sleep till two hours after any meal. Indeed, he contends, that walking a little after meals facilitates digestion. He also recommends the following maxims: not to sleep, if you can avoid it, in the open air, or when the ground is moistened by dew; or upon cold stones; or or in a damp place; or upon beds or chairs that are varnished; or on chairs or stones heated by the sun; as such indiscretions occasion colds, palsies, and other disorders†.

In regard to sleeping in the open air, we see many common people, particularly in the country, take a very long nap upon the grass, in the day-time, without any inconveniency. But those who are not accustomed to that practice are liable to catch cold, if they happen to fall asleep even on a garden bench; for the system becomes warm during sleep, and if a current of cold air affects any part of the body, a torpor of that part is necessarily produced‡.

But it is still more unwholesome to sleep in the open air *during the night*, and few can do it without injury to their health, unless they had been accustomed to it. In these climates, the night is, in general, too cold; and in hot countries, as on the coast of Guinea, the dews that fall are so extremely noxious, that it is accounted certain death to sleep all night in the open air§.

Sleeping in a carriage is not much to be recommended, and many have suffered severely, by sleeping in that state with the glasses down.

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* The Old Man's Guide to Health and Longer Life, p. 33.

† See the Art of Medicine among the Chinese. Code of Longevity, 2d edit. vol. iii. p. 236.

‡ Darwin's Zoonomia, vol. i. p. 213.

§ Valangin on Diet, p. 287.

The following miscellaneous rules may, in various circumstances, merit attention: 1. It is an indispensible rule, that fat people should avoid soft beds, and should sleep little, and rise early, as the only chance they have of keeping their bulk within due bounds. 2. It is a good rule, to lock the door of your bed-room, and to secure the windows, previous to going to rest, so as to prevent your being suddenly and hastily roused by any person coming into the room; and you should also examine the room carefully, that no cat or dog, or any other animal, may disturb your sleep, the alarm of which may be highly injurious. 3. It often happens, that if a person has not slept very well, he feels a weariness in the morning, which is best removed by exercise; for that weariness must have been occasioned by an obstruction of some indigested perspirable matter, which, by exercise, may be rendered fit to pass the pores. 4. Many people are perpetually subject to colds and coughs, if they sleep in a less warm head-dress, or thinner night-cap, than they have been accustomed to. Any risk of that sort ought to be carefully guarded against. 5. Such persons as are subject to cold feet, ought to have their legs better covered than the body, when they are in bed. 6. As the body is excited by light, hence darkness is necessary for repose; and fires in the room, or lamps, or candles, by which the air is vitiated, or admitting the morning light, ought to be avoided[*]. 7. We should never suffer ourselves to dose, or fall asleep, before we go to bed, as it must greatly diminish any chance of getting repose, when we wish for sleep. 8. Some sleep with their eye-lids open, like hares, who are led to do it in consequence of their timidity; but this practice is not to be approved in men, because dust may get into the eyes, and the light in the morning may become so powerful as to interrupt sleep. 9. There is not a more pernicious custom, than that of reading in bed, even in the day-time; such a practice strains the eyes; but by candle-light it is still more injurious; to which is to be added, the danger of having the bed set on fire, and not only suffering a cruel death one's self, but being perhaps the source of infinite mischief. 10. At public schools, where great numbers of children sleep together, the utmost attention ought to be paid to the nature of the beds, the bedding, the airiness of the apartment, and every thing that can prevent the bad effects of crowding numbers together, and compelling them to breathe a confined and vitiated atmosphere. 11. Those whose sleep is apt to be interrupted by slight causes, should nevertheless keep themselves quiet, and warm in bed, with their eyes shut, and without tossing or tumbling, and this will, in some degree, answer the purposes of more sound repose*.

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[*] No fire, candle, or rush-light, or lamp, should be kept burning during the night in a bed-room; for it not only vitiates the air in a very considerable degree, but also disturbs and prevents the rest of those whose sleep is uneasy, particularly the aged. In a dark apartment, sleep generally comes on without much invitation; whereas, any light in the apartment, stimulates the brain, and consequently the whole nervous system, and dispels any tendency to repose.—*Willich's Treatise on Diet and Regimen*, p. 501.

On the whole, I am satisfied, that there is no habit more conducive to good health and good spirits, or which renders a man fitter to go through a great deal of labour, either of body or mind, than that of taking a sufficient quantity of sleep, from six to eight, and even nine or ten hours, if nature requires it. I understand, that the late Lord Mansfield frequently inculcated the advantages to be derived from a rigid adherence to these doctrines, (his maxim was, *cultivate sleep*), and it is well known, how great a quantity of business he went through, and what good health and good spirits he enjoyed for a great number of years. To continue long in bed, without sleeping, is weakening and injurious; but a person may take all the repose that nature requires, and will have time sufficient, during the remainder of the day, to go through all the necessary business, and to enjoy all the real pleasures of life.

The importance of this subject need not be dwelt on. Indeed, a large proportion of the miseries of mankind may be attributed to an improper system, regarding their sleep. Some sleep too little, and, owing to that circumstance, they not only injure their health, but become prone to all the violent passions so injurious to those who indulge them. Others sleep too much, become unwieldy and lethargic, and perish before one half of that space of time, during which they might have existed, has elapsed. Whereas, an attention to a proper system regarding sleep, must be productive of the happiest consequences. Sleep is so natural to man, that, in almost every instance, it must be the fault of the individual, if he does not enjoy it to that extent, which is so essential for his comfort and happiness.

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* Mackenzie's History of Health, p. 384.

CHAP. VII.

ON THE GOVERNMENT OF THE PASSIONS, AS CONNECTED WITH HEALTH.

AMONG the various systems which have had their day in physic, and which farther investigation, and more accurate inquiries, have overturned, there are two, so immediately connected with the subject of this chapter, that it is necessary to advert to them; the one was formed by Stahl, and the other by Hoffman, both able men, and the founders of two celebrated schools in medicine.

According to the doctrines of Stahl, the disorders in the human body, *proceed principally from the mind;* and according as it is variously affected, it produces different diseases. Hence, when the mind, which animates the most robust and best organized body, is violently agitated by fright, terror, rage, corroding grief, envy, vehement desire, or any other passion, whether sudden, or attended by long and painful sensations, the body manifestly suffers[*], and a variety of diseases, as apoplexy, palsy, madness, fevers, hysterics, may be the result. It evidently appears, that, in these cases, it is the mind which has affected the body, and occasioned its derangement.

Hoffman, and his disciples, on the other hand, maintain, that the primitive cause of all disorders lies *in the structure of the body*, and the mechanism of its organs. Hence, that when a noble and essential part of the body is destroyed, or even greatly injured, death ensues; and that any disorder, in any of the essential parts of the body, causes not only a disease of the body, but frequently of the mind also, in proportion as the part affected is more or less intimately connected with the faculty of thinking. They assert, that intense cold, for instance, may occasion a fever, as well as a sudden and violent fright; and that a stroke with a mallet, upon the head of a man, is sufficient to disorder the most rational, acute, and vigorous mind. Hence, it is evident, they affirm, that the diseases both of the body and of the mind, are visibly occasioned by the disorders of the body*.

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[*] 'Of the power of mind, over body, (says an intelligent correspondent), I have seen some striking instances, and can safely affirm, that mental agitation is a strong predisposing cause of disease. I lost two friends some years ago, in fevers, the origin and progress of whose complaints I knew, and carefully watched. One was a physician, of a very strong and robust habit of body, but whose mind having been dreadfully agitated by a particular vexation, he caught a low typhus fever, in visiting a poor patient, and sunk under it. The other was a gentleman of great delicacy of sentiment, and who was cruelly harassed, by the brutal behaviour of a partner in business. He took a typhus, though no cause of infection could be traced, and fell a victim to it. I am satisfied that the actual cause of the death of both was mental agitation.'

Whoever considers this subject dispassionately, will probably be of opinion, that, to a certain extent, both these systems are right; and that the only error is, in restricting the sources of human maladies, either to the mind, or to the body, when either may occasion various disorders; and sometimes both are so complicated and blended together, that it is impossible to say, which was the actual parent of the disease.

As it will hardly be disputed, that the mind causes many of those disorders with which the body is afflicted, it is proper to consider, what circumstances, whether connected with the powers or faculties of the mind, or with the motives or passions by which it is influenced, are calculated for the preservation of the health, or may occasion disease.

1. *Of the Mind in general, as connected with Health.*

The body of man, it is well known, requires constant reparation; and its strength is exhausted, not only by its own exertions, but also when the mental powers are too much exercised. In proof of the latter position, let any person try the effect of intense thinking for twelve hours; and he will soon find, how much his body is thereby fatigued, though he should never stir from the chair he sat on. It is necessary, therefore, with a view to the preservation of health: to be as careful and moderate in exercising the mind as the body; for, as the poet of Health has well remarked,

> 'Tis the great art of life, to manage well
> 'The restless mind†.'

It may also be proper to observe, that the gradual improvement of the mind, is as essential for health, as the and most complete subjection. If uncontrouled, and left to themselves, they affect us, as a tempest does the ocean, without our being able to counteract their pernicious influence[*]. Fortunately, they may be regulated by education, by early restraint, or by unwearied personal attention, founded on the full conviction of its necessity, the practicability of which has been proved in the instances of Augustus and of Cornaro. At the same time, each individual has a natural disposition, or turn of mind, born with him. The passions do not act with equal force on all. Their effects vary, according to the diversity of constitutions, both of mind and of body; and, even in the same individual, differ at different times[†]. Happy is the man, however, whose temper is naturally good, or who has found means to correct its violence.

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* See Bielfield's Elements of Universal Erudition, vol. i. p. 123. Also, Philosophy of Medicine, vol. i. p. 48.

† Armstrong's Art of Preserving Health, book iv. line 84.

Sometimes men, while in the vigour of life, subdue an untoward disposition, finding it necessary for their success and advancement; for enabling them to live comfortably in society; for preventing quarrels, and their consequences; from the strictness of martial discipline, and other causes; and yet, after they get old, and fall into a valetudinary or diseased state, lose their good humour, lay aside their former calmness of temper, and become fretful and irascible. This should be checked, if possible, at the commencement; for, by the indulgence of any unruly passion, the disorders of old age are greatly aggravated; and they will find, too late, that to retain, when once acquired, a dominion over our passions and affections, is an essential and indispensible requisite to health[‡].

It has often been remarked, that persons destitute of ambition and avarice are peculiarly likely to enjoy long life.

> Free from those anxious cares, which oft perplex
> The wily statesman, or the miser vex;

they feel no regret for the past, nor anxiety about the future. Enjoying that tranquillity of soul, on which the happiness of our early years so much depends, they are strangers to those torments of the mind, which usually accompany more advanced years, and by which the body is wasted and consumed[§]. Hence a calm, contented, and cheerful d position, may be justly considered the great source of health, in regard both of body and mind; and ought to be accounted the most important of all our possessions.

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[*] Willich's Lectures on Diet and Regimen, p. 578.

[†] Mead's Works, p. 42?.

[‡] Willich's Lectures, p. 579.

[§] A friend with whom I have corresponded on the subject of longev expresses his firm belief, that an anxious state of mind brings many to t

Modern times, also, it is justly observed, are distinguished by a spirit of restless enterprise, and propensity to new undertakings, which deprives many of the most valuable part of their life. The great increase of luxury, by still multiplying its wants, makes new schemes, and new exertions of the faculties, always more necessary. Hence arises that endless uneasiness, which destroys all sensations of internal tranquillity and contentment, and which never suffers men to enjoy that degree of peace and relaxation, so indispensibly requisite for the preservation and the restoration of health*.

It is necessary to observe, at the same time, that, in several instances, a certain activity of mind has accompanied longevity. Lord Bacon remarks, that the milder sort of creatures, as the sheep and the dove, are not long-lived; and that choler is the whetstone and spur to many functions in the body. He admits, that, to be lean, with a settled temper, denotes long life; but then he contends, (as has been already remarked), that persons, who are inclined to corpulency, cannot expect long life, unless it is joined with choler, and a disposition stirring and peremptory.

Medical authors have frequently inculcated, and certainly with reason, that, by the due regulation of the passions, many fatal disorders might be prevented, and that a large proportion of the diseases to which we are prone, originate from the influence of the passions on the human system†.

Every day's experience points out, how frequently giving way to passion occasions the most dreadful disorders. An-

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end, long before their natural term, or what might be expected from the original structure of their bodily frame. Whether their anxiety arises from alarms regarding the state of public affairs, or from distress in consequence of the pressure of domestic expenditure, their nerves become relaxed and unstrung, and the due circulation of the sources of life are deranged. Hence arise distraction of the senses, and ultimately the destruction of the body, by palsy, dropsy in the chest, bilious redundance, and various other ways. If these doctrines are well-founded, the divine ought to be sent for in many cases, where it is in vain to have recourse to the physician. One of the best means to preserve health, is to prevent the maladies of the mind; and the best receipt for that purpose is, to settle a regular, and, if possible, a daily account with God and man.

* Hufeland, vol. ii. p. 53.

† See Dr. Lettsom's Address, in the Introduction to Dr. Falconer's Dissertation on the Influence of the Passions on the Disorders of the Body, 3d edit. Introduction, p. 17.

for the health and happiness of man, than to keep those sources of disease and misery under due objection? By this is meant, not a stoical indifference, which would prevent our enjoying many of the pleasures of life, but such a due regulation of the emotions and affections of the mind, as would enable us to enjoy all its advantages, without being the slaves of unmanly fear, of animal appetite, or of any inferior passion. A mind possessed of spirit and fortitude, will not sink under those disappointments to which all, but particularly the aged, are necessarily subjected; whereas, the unfortunate individual, who is subdued by fear, rage, despair, or any other violent passion, can neither enjoy health, nor feel any pleasure in his existence.

3. *Of the Pleasing Emotions of the Mind, as connected with Health.*

The emotions of the mind, however, are fortunately not always of a violent or distressing nature; and we shall now proceed to discuss those of a more pleasing description, namely, hope and joy.

1. *Hope.*—It is well observed by a great philosopher, that if man were deprived of hope and sleep, life would be no longer desirable. Indeed hope seems to be designed for the support of man, under the gloomy vicissitudes of human destiny; and we bear with more ease the calamities of life, when we can thus represent to our imagination, the animating prospect of better days.

> Hope prolongs our happier hour,
> Or deepest shades, that dimly low'r
> And blacken round our weary way,
> Gilds with a gleam of distant day[*].

The pleasures of hope, indeed, have long been considered one of the greatest sources of human happiness[†]. If *fear*, as has been already described, is attended with such destructive consequences to the animal economy, what advantage may not be derived from the opposite emotion of *hope?* It has accordingly been remarked, that when the minds of persons have been fortified by hope, they either escape contagion from any prevailing epidemic, or are infected by it, in a milder manner than those who give way to unfavourable apprehensions.

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[*] See Gray's Ode on the Pleasure arising from Vicissitudes, 4th edit. of his Works, vol. v. p. 58.

[†] A beautiful poem, 'On the Pleasures of Hope,' by Thomas Campbell, Esq. must be known to our readers, or is well entitled to their attention.

But hope is not only a means of preventing contagion, but also greatly contributes to the cure of disease*. Hence the effects of amulets, incantations, and charms; which could have no real efficacy, but as working on the imagination, from the hopes which they excited. It is particularly necessary to excite hope, in those who labour under chronic diseases, as it will induce them strenuously to pursue the necessary means of cure, which, to be effectual, require to be long continued.

A curious question has been discussed, whether a physician ought to cherish hope in his patient *to the last?* Such conduct has, by some, been deemed improper, in a religious point of view. Unless, however, it is strongly insisted upon by the patient, or his near relations, any intimation of great danger, had better be avoided; for it sometimes happens, that the most experienced and sagacious physician, is mistaken in his prognostics; and persons recover from the brink of the grave, who, probably, would not have escaped, had they been informed that there was but little or no prospect of recovery†.

If such are the advantages of hope, when restricted to objects of a sublunary nature, what may not be expected from the effects of that emotion, when it embraces higher objects? for it is the hopes of immortality alone, that can make life of any real value, or render the burthens of it easy and supportable‡.

2. *Joy.*—This is certainly one of the greatest *panaceas* of life, and one should never neglect to seek and to employ, every occasion of indulging it, when it is pure, and not too violent; for a joyous state of mind, supports the general vigour of the body; and has not only a tendency to preserve it from the attacks of particular diseases, but also to prolong life. Laughter also, that external expression of

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* This is the doctrine of Boerhaave and of Sanctorius.

† See an interesting Essay on the Changes produced on the Body, by the operations of the mind; written by the late Dr. Corp, M. D. Bath. On this subject, a respectable physician lays down the following rules. In all cases where the fears of the patient would produce immediate danger, silence is his duty. In those where the life of the patient, by obstinacy is risqued, he must be told of his danger. In certain diseases, the physician may, without alarming his patient much, state, that his case is critical, where the interests of a family may render such an intimation necessary.

‡ Hufeland, vol. ii. p. 260.

[illegible] most salutary of all the bodily movements [illegible] digestion, circulation and perspiration; [illegible] frame.

[illegible] sudden joy is sometimes injurious even to [illegible] health, the utmost circumspection should [illegible] communicating, *to the sick*, any intelligence [illegible] excite that emotion too violently. With this [illegible] may be of no inconsiderable use in the cure of [illegible] diseases, more especially in chronic cases; cheerful- [illegible] thought being of no small use, in enabling nature [illegible] off the disease, or to support it with less injury to [illegible] constitution*.

On the whole, those who pass cheerfully through life, have in general the most healthy appearance, and every characteristic of long life; and it has been well observed, that those of the higher ranks in France, who, instead of associating gloomily together, for the purposes of inebriety or gambling, generally spend all the hours they can spare from business or study, with the young, the gay, and the happy, thence live longer; and, what is of much greater consequence, live more happily, and enjoy their faculties of body and mind more entire in old age, than any of the same description or rank in Europe.

CONCLUSION OF PART I.

If it were necessary to compress within a moderate compass, the rules detailed in this, and the six preceding chapters, the following summary may serve for that purpose.

Rules for the Preservation of Health.

1. Breathe pure air; 2. Use a moderate proportion of liquid food; 3. Consume no more solid food than the stomach can easily subdue; 4. Preserve the organs of digestion in good order; 5. Take regular exercise without incurring fatigue; 6. Sleep as many hours as may be necessary to restore the strength of the body and mind; 7. Control your passions, and bear with fortitude the disappointments of life:—These are the most effectual means of preserving health, of enjoying life, and of attaining longevity.

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* See Hufeland, vol. ii. p. 261; and Corp's Essay, p. 48.

CODE

OF

HEALTH AND LONGEVITY.

PART II.

OF

. CLOTHING.
. HABITATION.
. CHANGE OF RESIDENCE.
. CUSTOMS AND HABITS WHICH INFLUENCE HEALTH.
BATHING.
THE MEANS OF PREVENTING AND REMEDYING ACCIDENTS, OR COMMON DISORDERS; AND,
7. ARTICLES OF A MISCELLANEOUS NATURE; AS, 1. RANK IN LIFE; 2. EDUCATION; 3. PROFESSIONAL OCCUPATION; 4. CONNUBIAL CONNECTION; AND, 5. AMUSEMENTS.

CHAP. I.

OF CLOTHING.

OTHING, though not an article of the first necessity ery climate, is, in most countries, one of the greatest mmodations to man. Nature has provided the rest of animal creation with various defences of hair, wool, hers, and scales, by means of which they are enabled ndure exposure to the different elements, and to avoid ous inconveniences and dangers to which they are osed; whilst man is not furnished with any covering, m which he can derive, at least to any extent, the same antage. We may conclude, therefore, that it was in-ded by the Creator, that man should provide himself th clothes.

It is admitted, at the same time, that garments are not *sentially necessary* for man. In hot countries, there are arious tribes and nations by whom they are seldom, and ometimes never used*. Even in cold climates, instances re not wanting, of savage tribes, who were but little ac-ustomed to any species of dress†. But though clothing s not an absolute necessary of life, nor so essential as air, ood, digestion, exercise, or sleep, there are but few coun-ries where man can exist in comfort without it; and Providence has given him powers of invention, by which he can prepare an artificial covering, whenever he finds it desirable. Even by the most savage tribes some species of clothing has been sooner or later adopted; and, among civilized nations, comfort, taste, and happiness, as well as health and longevity, have been essentially promoted by it.

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* Edwards, in his History of the West Indies, (vol. i. p. 53 and 75, 8vo. dit.), informs us, that the ancient Caribs went naked. Buffon, in his ob-ervations on the varieties of the human species, has also stated many facts o prove, that in several warm climates, men have been accustomed to go ntirely naked.

† Dr. Henry, (Hist. of Great Britain, 4to. edit. vol. i. p. 469), states, that here is hardly any one fact in ancient history better attested than this, that he first inhabitants of every country in Europe, and particularly in this sland, were either naked, or almost naked, unless the custom they had, of ainting their bodies, can be included among the clothing arts. Herodian, ib. iii. c. 47, to account for this fact, says, " The Britons drew upon their aked bodies, the figures of animals of all kinds, which they esteem so great n ornament, that they wear no clothes, in order that these ornaments may e exposed to view."—Perhaps the fondness which the Celtic tribes enter-ained for painting their bodies, rendered them partial afterwards to variegated garments, and introduced that chequered garb which is still the favourite dress of the Scotch Highlanders.

In treating of this subject, I propose to consider,—

I. The advantages of clothing, and the circumstances which led to its use. 2. Its disadvantages. 3. The materials of which it may be composed. 4. The wholesomeness of the principal substances made use of. 5. The form of the various articles of dress, as connected with health; and, 6. The rules to be observed regarding clothing, according to the climate and seasons, and also according to the age, the sex, and the situation or circumstances of each individual.

SECT. I. *Advantages of Clothing.*

IT does not come within the limits of this work, to consider the public and political advantages of clothing. It certainly tends to excite industry;—to furnish employment to a great proportion of the population;—to encourage the attachment between the sexes;—to increase and facilitate commerce, both at home and abroad;—to aid the civil government, being both a source of wealth, and a fund for taxation;—and by promoting decency, it tends to advance the interests both of religion and morality: but considering it in so far as it is connected with health and longevity, it is favourable to, 1. Protection; 2. Cleanliness; 3. Health; and, 4. Strength.

1. *Protection.*—In rugged or woody countries, some kind of clothing is useful for protecting the feet, and other parts of the body, from the injuries to which they are exposed. A savage, with the toughest possible skin, can neither run over stony ground, nor brush through a thicket of wood, with as much facility and safety as a person properly clothed. Indeed, nothing can be more helpless than a naked savage, whom every thorn can molest; who is equally annoyed by the heat of the sun by day, and by the inclemency of the heavens by night; and who is obliged sometimes to cover his body with unctuous matter, and sometimes compelled, to shelter himself in regions of smoke, from the stings of innumerable insects, with which

the atmosphere, in the hot seasons of the year, so much abounds[*].

2. *Cleanliness.*—Another advantage resulting from clothing is that of cleanliness,—so essential to health and comfort. Without clothing, it would be necessary for those who wished to be clean, to be washing their bodies frequently, and, in some situations, water could not be obtained for those who would have such constant occasion for it.

3. *Health.*—In no respect is clothing of more importance than with a view to health[†]. It is essential that the body should be kept as nearly as possible in the same temperature. This can only be effected by means of clothing, which may be rendered warmer or cooler, as circumstances may require. It is by clothing, that in cold countries a due proportion of perspiration, so essential to health, can be preserved; and it is by it that in hot countries, the head and the eyes are guarded from the violence of the sun, and the skin from the pernicious influence of a burning atmosphere[‡].

4. *Strength.*—Clothing also, at least in northern climates, is useful, by contributing to strengthen the human frame, and promoting its growth. Nourishing food undoubtedly promotes both strength and growth; but in a cold climate, without the advantages of warm clothing, it would not alone be sufficient.

SECT. II. *Disadvantages of Clothing.*

IT must not be imagined, however, that clothing is attended with no disadvantages. Among these are to be included, 1. The expence it occasions, when beyond the resources of the wearer; 2. The risk of its becoming wet, and consequently uncomfortable, and prejudicial to the health; 3. The mischiefs resulting from the wearing of garments improperly made; 4. The disadvantages arising from the use of too great a quantity, whether in health or sickness; 5. The time wasted at the toilet, which often interferes with the attention due to exercise; 6. The restraint to which a person is often subjected, when dressed; and, 7. The risk, from the garments worn, of being infected with contagious disorders.

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[*] The people of Greenland and of Lapland are obliged, even in summer, to live perpetually in a thick smoke, to guard themselves against the bite of the gnats, during the warm season of the year.—*Buffon's Nat. Hist.* vol. ix. p. 63.

[†] The particular advantages of clothing, *in regard to health*, will be afterwards discussed in Sect. 4.

[‡] To prevent the risk of being *sun-struck*, as it may be called, it is advisable, in hot climates, to wear white hats, or some folds of clean white paper under a black one.—*Tissot's Advice to People in General*, p. 167.

1. *The Expence.*—When clothing requires a greater expence than the individual can afford, or when he indulges extravagance in dress, so far as to be unable to purchase a sufficient quantity of nourishing food, in order to make a gay and showy appearance, no circumstance can be more productive of mischief, or is more frequently the source of diseases as well as crimes.

Among the lower classes of society, extravagance in dress, in many cases, deters them from marriage, by wasting those funds which might enable them to set up in a married state, or would furnish considerable aid in maintaining a family afterwards: it also tends to deprive them of an independent resource, during sickness, or whilst subjected to the frailties of old age*.

The extravagance of the rich, in regard to dress, though not equally mischievous, from the greater extent of their resources, is yet frequently attended with many injurious consequences†, to their health, as well as to their circumstances. How many have had their fortunes impaired, their constitutions injured, and their virtue endangered, by their excessive attachment to fashionable dress? In vain have statutes been enacted *against excess of apparel*, and various proclamations and mandates issued for restraining the common use of expensive and superfluous clothing, a taste for finery once acquired, can hardly be eradicated from the minds of those who, incapable of directing their attention to great objects, must consequently have their time occupied with frivolous pursuits.

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* A taste for finery and profusion among those employed in manual labour, operates more than they are aware of, both to their own detriment and to that of society. *Statistical Account of Scotland*, vol. x. p. 441, 442.—In the same work, it is stated,—"Dress is much more attended to by the common people, than in former times, and young women, who formerly thought of saving money for a portion, now sink all they can get in dress and ornament."—Vol. ii. p. 390. "Few labouring people are now able to provide for sickness or old age. Before marriage, they generally expend the greater part of their wages in purchasing fine clothes. This leaves them but little to furnish their house, and to begin the world."—Vol. ii. p. 121.

† Taylor, the water poet, in contrasting the simplicity of the aged Parr's manner of living, with the splendour and luxury of the opulent, thus reprobates their profusion.

> To wear a farm, in shoe-strings edg'd with gold,
> And spangled garters, worth a copyhold;
> A hose and doublet, which a lordship cost;
> A gaudy cloak, three mansions' price almost;
> A beaver, band, and feather for the head,
> Priz'd at the church's tithe, the poor man's bread.

2. *Aptitude to get wet.*—In almost every quarter of the globe, there are rainy seasons, when it is hardly possible to be much out of doors without getting wet. This is a great disadvantage in regard to clothing; wet garments being the source of various disorders. Many inventions have been thought of to remedy this inconvenience; as, various articles made of oil-skin, for covering hats, great coats of the same material, &c. Water-proof cloth, as it is called, has likewise been tried, but it soon loses that property. Against any danger from this cause, clothes of a strong texture, which wet cannot easily penetrate, will, in general, be found the best defence. As wet clothes, however, cannot always be avoided, special care ought to be taken, to use as much exercise as possible when they are on, and to avoid keeping on wet clothing when the body is at rest, as it tends so much to diminish perspiration, and is in various other respects unfavourable to health. As soon as the wet clothes are put off, it is highly expedient, to rub the skin with a flesh-brush, or a coarse woollen cloth, to restore the natural warmth of the body, and the circulation of the skin.

3. *Often improperly made.*—From the folly of fashion, or the unskilfulness of the artist, multitudes have suffered from the tightness of their hats, of their boots, of their shoes, and of other articles of their dress[*]. Many females were doomed to misery, when the barbarous custom of wearing tight stays was in fashion; and they are still often exposed to that cruel and often fatal disease, the cancer, from too great tightness of the clothes about their breasts. Tight bracelets, narrow sleeves, tying the sleeves close to

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[*] The close pressure of any particular article of dress is highly reprehensible. Narrow sleeves are a very great check on the muscular exercise of the arms. The waistcoat, in its present fashionable form, may be very properly termed a *strait* one, and almost be considered in many instances, as an indication of some mental derangement. The wrists and knees, but more particularly the latter, are braced with ligatures, or tight buttoning; and the legs, which require the utmost freedom of motion, are screwed into leathern cases, or boots, though the wearer perhaps is never mounted on horseback. To complete the whole, as the head is confined by a tight hat, but rarely suited to its natural shape, so in regard to shoes, the shape of the foot, and the easy expansion of the toes, are never to be consulted, but the shape must be regulated by the fashion of the day, however tight or uncomfortable.

the elbow, (which was formerly the fashion with ladies' gowns, but is now happily exploded), were all improper practices. The tight stocks worn by the men in former times, were highly injurious to health, obstructing the blood in its course from the brain, by which headachs, apoplexies, and other fatal diseases were occasioned. It is therefore an unfortunate circumstance, that they should still be retained in the dress of the soldier*. It may be proper to add, that however injurious it is for grown people to wear tight or narrow clothes, it is still more mischievous to those who are in a growing state. This is a point to which parents are seldom sufficiently attentive, however obvious, and, indeed, however necessary to be adverted to, for the health and comfort of their children.

4. *Apt to be used in improper Quantities.*—In civilized societies, the improvement of arts, the facility with which men are supplied with the conveniences and luxuries of life, and the gratifications which these afford, have disposed mankind to be perhaps too solicitous, to guard against the inclemency of the seasons, and to use too great a quantity of clothes for that purpose. Hence it is, that our bodies, being rendered more tender and delicate, and our feelings more acute, we find, that in proportion to the increase of luxury, we become less hardy, and more obnoxious to the influence and impression of various sources of disease†.

It was of old observed by Lord Bacon, that great store of clothes, either upon the bed, or the back, relaxes the body‡. And Dr. Beddoes, with his usual ingenuity, has described the mischievous effects of over-clothing, which, drawing out too much perspiration upon every exertion, greatly weakens the frame, and occasions coldness and deadness in the extremities§.

Mere infants, who cannot have much exercise, ought certainly to be warmly clothed in cold weather; but children, when they can run about, ought not to be oppressed with many clothes. By heavy garments, the activity of the body is checked; and when labour or exercise is taken, it occasions fatigue, and a weakening perspiration*. Indeed, those who keep themselves too warm in their younger years, deprive themselves of the advantage to be derived from additional clothing when they get older†. When a person is weak, either from sickness or from old age, it is of the utmost consequence to have light and soft garments, which are easily carried about, and which furnish warmth, rather from the nature of the material, than from the quantity worn. It is well known how much more warmth is conveyed by flannel, worsted stockings, and other articles made of Shetland, and other soft wools, than when they are manufactured of coarser and harsher substances.

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* Garters, buckles, &c. when drawn too tight, not only prevent the free motion and use of the parts about which they are bound, but likewise obstruct the circulation of the blood, which prevents the equal nourishment and growth of these parts, and occasions various diseases.—*Buchan's Domestic Medicine*, p. 87 and 89.

† Adair's Medical Cautions, 2d edit. p. 308.

‡ History of Life and Death, Code of Health, vol. iv. p. 120.

§ Manual of Health, p. 224, 225.

In regard to quantity, a curious question has arisen, whether the greatest quantity of clothes ought to be worn within doors or without‡. When without, a person is certainly more exposed to the inclemency of the weather, but that disadvantage is compensated by the motion and exercise that he takes. Within doors, a person sits more, and consequently is more apt to feel cold, to prevent the effects of which, immoderate quantities of fuel are the common resource. The Turks, who are not fond of fires, keep themselves comfortable within doors, by using warmer clothing than when they go out; and, to a certain extent, this plan is well entitled to mature consideration, being less pernicious than the violent open fires which we indulge in, or the heated stoves adopted in other countries.

5. *Occasions waste of Time.*—Another disadvantage resulting from clothing, is the waste of time taken up in attention to the decorations of the toilet, to the neglect of more essential duties§, and that of exercise in particular. When dress was more attended to than it is at present, it is incredible how much time was employed in this contemptible occupation. Many were dressed three or four times a-day; and the toilet of a fine lady, when fitted out for any

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* Conservateur de la Santé, p. 209.

† Hart's Diet of the Diseased, p. 153.

‡ The Chevalier Edelcrantz ingeniously observes, that when the difference of temperature between the external air and the house is inconsiderable, it may be useful to put on a great coat when returned home, instead of doing it when going out. The exercise in the open air produces the necessary degree of warmth, which, in the chamber, in a sedentary state, can only be supplied by additional clothing. See Code of Health, vol. ii. App. No. 15. The Chinese of rank, who have no fuel, put on 18 or 20 habits, one over another, which they successively take off, and give to a servant, in proportion as the sun ascends to the meridian, and they assume them again, as the cold of evening approaches.

§ Strutt on the Dress and Habits of the People of England, vol. ii p. 249.

of cloth from the macerated fibres of the inner bark, of a tree or shrub commonly found in these islands, spread out and beaten together, and thus a kind of cloth is prepared, resembling coarse China paper.

2. The use of cotton, as a material for making cloth, is of great antiquity. According to the accounts of ancient authors, there was a nut which grew in Egypt, in which they found a substance, which they spun and wove for garments. This doubtless was the cotton shrub. But the period at which it was first used for that purpose is unknown.

3. The use of flax, hemp, and other filamentous plants, is of great antiquity, though it required much ingenuity and attention to separate the fibrous parts from the bark or wood, which was necessary before they could be spun or wove; and consequently a variety of processes practised which required time, skill and experience. Yet the use of linen may be traced to a very remote period of history. Flax was certainly cultivated in Egypt before the birth of Moses, and the first discovery of this kind of cloth is ascribed to Isis, at the commencement of the Egyptian era.

4. The skins and feathers of birds, are in general made use of, more as an ornament than as dress, but in some countries, more especially in Mexico, they have been converted into a species of garment. The Laplanders, likewise, though in winter they clothe themselves with the skins of the rein deer, yet in summer use the skins of birds[*].

5. The inhabitants of the sea also produce materials, which the ingenuity of man has converted to the purposes of clothing. Besides the skins of seals, and other amphibious animals of that species, which are converted into leather, there is a kind of silk, of a bright yellow, which sometimes adheres like a tuft, to very large shell-fishes, called *Pinnæ Marinæ*. It is known that the ancients were acquainted with this article, and used it as a material for making cloth[†].

6. That such multitudes of the human species, should be clothed by the labours of so small an insect as the silkworm, is hardly to be credited. This discovery is by some attributed to the Chinese. The price of silk was formerly so high, that it was worn by none but persons of the greatest

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[*] Buffon's Natural History, translated by Smellie, vol. iii. p. 62.

[†] Goguet, vol. i. p. 128. The Greenland women clothe themselves with the skin of the dog-fish. See Buffon's Natural History, translated by Smellie, vol. iii. p. 62.

wealth and dignity; and the triumphal garments of Vespasian, and of his son Titus, were made of silk[*], which proves that it was then considered as a very precious article.

7. But of all the sources of clothing, the articles furnished by quadrupeds, are to be accounted the most important. Not only is their hair or wool of essential service in that respect, but their skins, when converted into leather, answer the purpose of clothing, in a manner which can hardly be supplied by any other material[†]. At first the skins of animals, with the hair or wool on, were almost universally made use of as garments; and in a period of great antiquity, Hercules, it is said, wore the skin of the lion which he had slain in combat. In the hot seasons of the year, however, this species of dress would be found too warm and heavy. Means were, therefore, fallen upon, by pulling off the hair or wool, to render the skin alone useful as a garment. But after the hair or wool was thus separated, the ingenuity of man soon discovered the art of converting these articles into cloth, which, for flexibility and warmth, were so much superior to skins, that the latter was soon laid aside, excepting for the feet, which required a stronger material for their protection.

SECT. IV. *Of the principal Articles used as Clothing, with a view to Health.*

IN a work of this nature, it is not necessary to dwell upon those arts, by means of which, the various materials above enumerated, are manufactured or prepared for use. But it is proper, however, to discuss the relative advantages, with a view to health, of the four principal sources of human clothing, namely, 1. Linen; 2. Cotton; 3. Silk; and, 4. Wool; and to add some general observations on the use of three other important articles, viz. fur, leather, and oil-skin.

1. *Linen.*—The use of linen cloth, as an inner garment, was long considered as a most fortunate discovery, at a time

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[*] Josephus, Bel. Jud. lib. 6, c. 24.

[†] In hot weather, the Crim-Tartars were accustomed to wear a cassock of sheep-skins, with the wool outwards, and in winter, or in cold weather, they turned their cassock, and wore the wool on the inside. See Collect. of Voyages, in 6 vols. folio, vol. i. p. 450.

when, owing to neglect of cleanliness, mankind were liable to a number of infectious disorders*. Linen was, on that account, much used by the Egyptians, and they took singular care to keep their garments always clean, esteeming cleanliness more than ornament†.

In regard to the supposed attraction of that article for moisture, it appears, from the experiments of Count Rumford, that linen does not attract moisture from the atmosphere with so much force or avidity as wool, hair, feathers, and other animal substances. Indeed the apparent dampness of linen to the touch, depends more upon the ease with which that substance parts with the water it contains, than from the quantity of water it actually holds‡.

In favour of linen it has been urged, that for healthy children, who run much about, fine linen is a proper covering next the skin, on every part except the feet and legs. It sufficiently preserves the internal warmth of the body, without any unnecessary stimulus or disagreeable friction. Particular infirmities, or a defective perspiration, natural in old age, may render flannel or fleecy hosiery advisable; but linen or cotton next the skin, is best suited to early life, and requires little trouble to keep it always clean§.

On the other hand, it is contended, that linen-cloth is not favourable to perspiration; that by its compactness, it imbibes too soon the perspirable humours, and that it does not part with them so readily as wool. Soiled shirts, therefore, produce a disagreeable cooling sensation, and stop perspiration, especially if made of strong thick cloth, and not very frequently and regularly changed‖. Wooliens next the skin, it is said, is preferable both in summer and winter. In the latter season, for its peculiar warmth; in the former, for its lightness, and its preventing the influence of the air on the body in a state of perspiration; whereas linen, when wet therewith, is cold and dangerous.

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* See Strutt on the Dress and Habits of the People of England, vol. i. Introd. p. 13. The use of linen was very ancient in Greece. It was imported from Colchis and from Egypt. Do. vol. ii. Introd. p. 120.

† As a proof of the advantages of linen, we are informed, that though in the capital of China, incredible numbers perish by contagious fevers, yet that in the more southern provinces of that empire, they are neither so general, nor so fatal as might be expected, owing, in a great measure, to the custom prevalent among the great body of the people, of wearing vegetable substances next the skin. The Chinese consider them more cleanly, and consequently more wholesome, than animal matter. Silk and woollen next the skin, ought only to be worn by persons of the most cleanly habits, or where there is no risk of contagion.—See Barrow's Travels in China, p. 349. Silk and woollen, it is said, are only more dangerous, or less cleanly, because, from concealing the dirt, they are worn too long, even until they become filthy, and that by people who, in other respects, pretend to cleanliness.

‡ Rumford's Philosophical Papers, edit. 1803, vol. i. p. 267.

§ Buchan's Advice to Mothers, p. 176.

‖ Willich's Lectures, p. 256.

2. *Cotton.*—This article stands in the middle between animal wool and linen. Like the one, it rather promotes perspiration, whilst, like the other, it imbibes and retains the perspired humours, to the injury of the wearer*. Like wool, it has the dangerous quality of attracting infectious matter; whilst, like linen, it can be easily washed, by which that disadvantage, in its manufactured state, can easily be obviated.

This substance certainly forms a species of garment, which is cheap, and well calculated for various purposes. It seems to be peculiarly well adapted for the garments of women, or those who live much within doors, being light and pliable. It is a dangerous article, however, from the thinness of its texture, and still more from its aptitude to take fire. In hot countries, where perspiration abounds, cotton-cloth, for inner garments, is reckoned superior, in point of wholesomeness, to linen; but in cold climates it is inferior to woollen in that important respect.

3. *Silk.*—This article does not require any particular discussion, more especially as, since the great improvements in cotton fabrics, those of silk have considerably diminished in Europe. It is generally considered to be better calculated for an outer, than for an inner garment, and for habits of elegance and of show, than of real utility†. At the same time, some maintain, that silk may be used with much advantage as an inner garment, particularly round the neck and feet, where the circulation, from want of sufficient exercise, is not complete. The consistence of the common handkerchief is best. Silk, it is said, gives a comfortable warmth, without keeping the skin so moist as flannel.

4. *Wool.*—But of all the articles of clothing, there are none that can be so safely recommended for general use as those made from wool, more especially to such as reside in cold or even temperate climates. It is certain, that a great diversity of sentiment has been entertained, with regard to the propriety of using woollen in all cases. We cannot, however, go so far as to lay it down as a general rule, that persons of all ages, sexes, and conditions of life, and in all

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* Willich's Lectures, p. 257.

† Ibid. p. 256.

countries, should not only have their outer garments of wool, but should also wear flannel next the skin[*]. Where flannel, however, or any fabric of wool, next the skin is used, which in many cases is highly salutary, the following rules may be attended to.

Rules regarding the use of Flannel next the Skin.

1. *As to age*, flannel is well adapted for *infants at the breast*, who can have no exercise but what is given them by their nurses, and indeed for children in general, who should wear it in the cold seasons of the year, or in cold climates[†]; but healthy young people, who can go about, and take sufficient exercise, had better reserve it as a resource for old age. It then becomes again essential, old age being, in regard to clothing, as well as in various other respects, a second childhood. It is dangerous, however, to postpone too long the use of flannel; for it is not to cure diseases solely, that warm clothing should be applied, but to prevent them. Often, and to them unexpectedly, men who boast of a strength superior to the elements and seasons, are laid prostrate by an apoplectic fit, or some other disorder, before their *flannel age* arrives; whilst, on the other hand, persons with weak constitutions, being thence obliged to pay a constant attention to self-preservation, protract their lives, in tolerable health, to a remote period[‡].

2. *As to sex*, the use of flannel next the skin is certainly highly proper for men, (who are more exposed to the inclemency of the weather), than for females; at the same time, when the latter have a tendency to consumptive or rheumatic complaints, the adoption of it may to them also, be recommended; and since the use of thin clothing has prevailed among females, even in cold climates, it is certainly proper that women at any rate, in the winter, should wear flannel drawers, to prevent them suffering from a fashion so little calculated for northern regions.

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[*] Count Rumford has declared his full conviction of the utility of flannel shirts in all seasons. He says, that he has worn them in all climates; in the warmest apartments, and in the most fatiguing exercise, without the least difficulty; that he was relieved, by the use of flannel, from a pain in his breast he had been subject to; that he never since knew an hour's illness, and that nothing exceeds the agreeable sensation of this dress, when people have been once accustomed to it.

[†] The celebrated John Hunter's receipt for rearing healthy children, was, " Plenty of milk, plenty of sleep, *and plenty of flannel*."

[‡] Letter from the Chevalier Edelcrantz, Code of Health, vol. ii. Appendix, p. 14.

3. *In regard to rank and station in life*—the use of flannel next the skin, is peculiarly well calculated for those who are constantly exposed to all kinds of weather, as husbandmen, fishermen, sailors, soldiers, travellers, and all sorts of working people; and it appears from the most undoubted authority, namely, the reports of the clergy who furnished the materials for the Statistical Account of Scotland, that abandoning the use of flannel shirts, has been in many cases injurious to the health of the common people, in the more northerly part of the island.

4. *As to the time of wearing*—the flannel should be thrown off in bed, after you have been some time in it, in order that the full benefit of it may be experienced during the day. Dr. Beddoes has justly observed, that no good reason can be assigned, why any one, who is master of a comfortable bed, should wear flannel next his skin in the night time[*].

There are some, however, to whom, below a linen shirt, a *flannel pectoral* alone may be of the greatest service, in winter, when troubled with colds, pains in the breast, or coughs. There are others, to whom, in the cold seasons of the year, it may be advisable to wear a *stomacher*, as it may be called, or a piece of loose flannel, in the day time, which may be thrown off at night, and which keeps the stomach and bowels in a warm and comfortable state[†]. I would recommend it indeed, to all persons, before they begin the flannel shirt, to try the stomacher and the pectoral.

It is also necessary, that the flannel should be frequently changed, more especially if worn in the night time, as well as by day. Great care should also be taken in the mode of washing it. Both flannel and fleecy hosiery should be washed in very hot water, and when wrung, should be well shaken, and hung up to dry, if possible, in the open air.

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[*] Manual of Health, p. 220. In another work, the same ingenious author has made the following observations. "The propriety of the use of flannel next the skin is a question not well determined by our medical writers. Worn in the day, it has always appeared to me useful in chronic catarrh, except in our settled hot weather. I doubt whether it should be habitually worn by night. Bed-clothes can always be laid on in sufficient quantity to prevent chilliness; on which account, flannel seems useless; and in that state of increased sensibility of the skin which sleep induces, it is more likely to be hurtful than at any other time, by the stimulating effects of its piles, and by the warmth it keeps collected round the body.—*Hygëia, or Essays Moral and Medical, by Thomas Beddoes*, M. D. vol. ii. Essay 5, p. 84. It is easy having a waistcoat buttoned at the shoulders, which can be taken off, without difficulty in bed.

[†] The seat of many colds, as they are called, is in the stomach, and the warmth of the flannel dissolves the phlegm, and cures the cold.

the head, in some degree, should be protected from the extremity of cold.

It is asserted, on the other hand, that many nations, even in hot climates, go without any covering on the head: that the Egyptians, who went uncovered, were reckoned stronger, and hardier, than the Persians with their turbans; that Hannibal, Cæsar, Massinissa, Hadrian, Severus, and many other distinguished warriors, always went uncovered, in the coldest or most stormy seasons: that it is a well known and excellent rule, to keep the head cool, and the feet warm; yet, whilst some attention is paid to the latter part of the maxim, the former is generally disregarded. Indeed, keeping the head too warm, is a practice condemned by many medical writers, as far back as Avicenna, who remarks, that covering the head too much, weakens it, and has a tendency to attract humours to that part of the body.

On this subject, the following general rules may be laid down: 1. Not to make the head too tender, by covering it too much either by day or by night; 2. In very cold, or very hot climates, to cover the head according to the season, but so as to shelter it from the cold in winter, and in summer, from the still more dangerous vertical rays of the sun; 3. In dry and temperate climates, and in youth, to go with the head bare, if there is no risk of its getting wet*; 4. At all events, not to cover the head, as the Asiatics do, *in the house;* and, 5. It is certainly right to harden and strengthen the head as much as possible, by frequently bathing it in cold water.

The principal articles made use of as coverings for the head, are, 1. The turban; 2. The woollen bonnet; 3. The hat; 4. The leather cap; 5. Fur-caps; 6. Wigs; and, 7. Night-caps.

1. *The Turban.*—This is the Asiatic covering for the head. It is generally composed of a number of folds of fine muslin or cotton cloth, and it is well calculated for defence against the rays of the sun, which are often so violent, as to occasion death. It is the custom, however, in those countries to wear turbans without intermission, in the house as well as out of doors. This occasions so constant a perspiration, that the skulls of those who wear them are

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* This old Saxon fashion is still preserved among the Christ's Hospita boys. They wear no hats, and are very healthy.

remarkably thin, compared to those whose heads are more slightly or less constantly covered[*].

2. *The Woollen Bonnet.*—This species of covering for the head, is of great antiquity, though now seldom to be met with, excepting in the northern parts of Scotland. Unless when ornamented with feathers, or made up in a military style, it has but a homely and poor appearance; from the looseness of its texture, also, it is very apt to imbibe, and to retain moisture; and it hardly furnishes any protection for the eyes, unless when it is broad-brimmed. Its use, on these various accounts, is rapidly declining.

3. *The Hat.*—This perhaps, on the whole, is the best species of covering for the head. It may be made either light or strong, as may be most agreeable[†]. It may be made not only of one, but of different colours, as white above, which does not attract the heat, and green below, the reflection of which is pleasing to the eyes; and it may be made high in the crown, by which the head may be kept cooler in hot climates[‡]. Hats are made of various materials, as of straw, for lightness; of whale-bone, (a recent discovery), for durability and strength; also of chips, of feathers, of silk, of Vigonia wool, &c.; but for general use, the best hats are made of fine wool, particularly the wool of lambs, mingled with the fur of the hare, the rabbit, the mole, or the beaver, and the hair or down of goats and camels.

It has been much disputed, whether round or cock'd hats ought to be preferred. When cock'd, hats certainly have a more martial appearance; but the round hats are more useful, sheltering the eyes from the sun, and protecting the face from the influence of the atmosphere. It is of great importance that hats should not be made too tight, which is too apt to be the case when they are first put on.

4. *Leather Caps.*—Soon after the great improvements made in the art of preparing leather, it was found, that it

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[*] See Hygeine, by Halle. Code of Health, 2d edit. vol. iii. p. 313, 318.

[†] To go with the head uncovered in sunshine, is certainly improper, both for children and adults; but our common black hats are ill calculated to avert the mischief, as they do not reflect the heat, but rather concentrate it in the most sensible manner upon the head. Hats of a white, or any light colour, made of straw, or similar light materials, would be far preferable, particularly for people labouring in the fields, soldiers, and travellers. In very hot weather, a piece of white paper may be fastened with advantage on the crown of the hat.—*Willich's Lectures*, p. 272.

[‡] In Russia, they use high crowned hats, for a very singular purpose. Having no pockets, they keep their handkerchiefs in their hats, which ought here to be called, not *pocket* but *hat handkerchiefs*.

could also be made use of as a covering for the head. It is still not unusual, to give leather caps to children, being cheaper than hats, and made of a material, with which they can be permitted to use more freedom, than with any thing made of woollen.

5. *Fur Caps or Bonnets.*—In Poland, and in other northern countries of Europe, they wear caps of fur, made from the skins of young lambs, which, by a particular process, are beautifully curled. These caps, require to be kept clean, but are well adapted for cold climates, and fitter for keeping out moisture than the woollen bonnet.

6. *Wigs.*—The head has a natural covering, but the hair which it produces, is in general rather to be considered as ornamental than useful. As in many cases it falls off by disease, and as with some it becomes prematurely grey, many are induced to wear wigs, or artificial hair. At first, this was merely intended as a fashionable dress, or to conceal baldness*, and other defects; but it is now ascertained to be a custom highly serviceable in headachs, weakness in the eyes, and other complaints of that nature. Indeed, from defective perspiration, or other causes, a species of scurf, either begins to appear, or increases on the surface of the head, *as age advances*, which must be highly prejudicial to health. By shaving the head once a week, or oftener, that scurf is removed, and if, in addition to that practice, which cannot be too strongly recommended, any person will take the trouble of dipping a flesh-brush in cold water; and of cleaning his head with it regularly every morning, it will be found a great preservative of health, and an effectual means of preventing various disorders to which old age is liable. The same wig, however, ought not to serve both in summer and in winter; at least many find it necessary, to line their wigs with flannel in the winter season.

7. *Night Caps.*—It is much disputed, in what manner the head should be covered during the night. Some species of covering is in general necessary, to prevent the hair, when worn, from being entangled and disordered during

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* Though baldness was reckoned a deformity among the Romans, yet wigs were not invented till sometime after the destruction of the republic. Julius Cæsar, therefore, was obliged to wear a crown of laurel to conceal his want of hair. See Strutt, vol. ii. Introd. p. 188. Long hair having always been esteemed beautiful, it is not, therefore, to be wondered at, that when nature was deficient in her bounty, people should be led to supply the defects of their own hair, by partially or totally adopting the harvests of other heads.—*Strutt*, vol. ii. p. 248.

sleep; but in regard to the quantity of covering, much must depend upon the season of the year, and the nature of the climate. In hot seasons or climates, a thin cotton night-cap may be sufficient, with a net to keep the hair tight and in order. In cold climates a woollen covering may be preferred. Both the example of the French, and the experience of many in this country, tend to prove, that keeping the head warm during the night, prevents tooth-achs, and preserves the teeth.

It is curious to observe the diversity of opinions which are entertained upon this subject. One medical author observes, that it is a custom with many people who live at their ease, not only to wear a warm night-cap whilst they are in bed, but they spend half the day when they are up in this unnatural dress. This prepares the head for frequent colds, and he adds, that a variety of other disorders must result from this imprudent indulgence*. The latter practice must certainly be condemned, but an intelligent author contends, that the head ought to be well covered whilst we are in bed, because colds and rheums are thereby prevented; and it is remarked, that as foreigners are more attentive to this circumstance than we are, they are less subject to coughs, and similar complaints†.

2. *The Neck.*

It has been much controverted, whether the neck should be covered or not‡. Women, it is well known, have their necks bare, without suffering any inconvenience from it.

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* Willich's Lectures, p. 270. It is a good rule, always to dress the instant one gets up.

† Adair's Medical Cautions, 2d edit. p. 396.

‡ All coverings of the neck ought to be worn loose. The modern cravats, filled with a stiffening of cotton or wool, are extremely injurious to the part which they are intended to protect. For, by occasioning too great heat, they render the neck unnaturally sensible to every change of the atmosphere. It is rather surprising, that from a due sense of their perniciousness, we have rejected all coverings of the neck in children, as being troublesome and useless; and yet, in defiance of reason and experience, we continue to encumber our own necks with such bandages.—*Willich's Lectures*, p. 274.—Neck-cloths, cravats, ribbands, and necklaces of all sorts, *when they are too tight*, stop the access and retreat of the blood to and from the head, and occasion innumerable maladies. The neck and throat being alternately expanded and contracted in speaking, chewing, and swallowing, it is the highest degree of imprudence to obstruct its motion for the sake of appearance, vanity, or fashion. Ditto, p. 275.—Neck-cloths and cravats, loosely tied, and not too thick, are the only proper coverings for the neck for men, and in regard to women, it cannot be disputed, that they are better without any.—Ditto, p. 277.

ness, numbness, &c. The buttons also, if tight, compress the hand, and incline it to shake*.

2. The *waistcoat* was formerly made exclusively of woollen, but now silk and cotton are equally common, and it is found more convenient, to augment or to lessen the warmth of the body, by increasing or diminishing the number of waistcoats, than by having one thick one. The outer waistcoat may thus be made of lighter, more elegant, and more costly articles. The waistcoat is peculiarly calculated to defend the front of the body. It is very important that it should be made long enough behind, for any vacancy between it and the breeches has often occasioned the lumbago.

3. The *coat* is the principal article belonging to the male attire. For daily use, woollen cloth is certainly to be preferred, but for elegant dress, silk in summer, and velvet in winter, are usually adopted by those who can afford them, more especially when they attend at courts.

By the coat, not only the trunk of the body, but the arms, are usually covered. In general, the arms receive no other covering, than the sleeves of the shirt and coat, though some particular individuals, who work in their waistcoats, have sleeves attached to them, a practice that ought to be more general among labouring people than it hitherto has been.

4. A variety of articles are made use of in different countries, for an *exterior garment*, with a view of protecting, not only the body, but the dress worn, from the inclemency of the weather. They may be classed under six heads: The ancient loose plaid or mantle; the modern close plaid; cloaks; great coats, spencers, and frocks.

In regard to the *loose plaid*, it was the general upper garment of the Ancient Britons, and of all the other Celtic nations. It was a piece of cloth of a square form, and sufficiently large to cover the whole trunk of the body, both behind and before.

It is still in use among the middling and lower ranks of people in the Highlands, and was formerly reckoned an elegant piece of dress for females of the first distincmuffs, however, which the men were accustomed to wear in France, not only for keeping their hands warm, but also their stomachs, could not be recommended, except in very particular cases. Wearing a piece of flannel, or of fleecy hosiery, over the stomach, if warmth is necessary, is a better mode of obtaining it, than by means of great muffs, which are now in a great measure laid aside.

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* Vaughan on Modern Clothing, p. 42.—The ornament adjoined to the wrist-band of the shirt, known in the modern times by the denomination of *ruffle*, was originally called the *band-ruff*, and formed an appendage to the sleeves of the coats, and doublets.—*Strutt*, vol. ii. p. 334.

The hands are often ornamented by rings and bracelets. The former, are hardly ever worn so small as to be prejudicial; but bracelets are often so tightly put on, as to prove highly injurious to health*.

4. *The Body and Arms.*

The body, or trunk, being the centre of heat and life, in which the process of digestion goes forward, requires to be protected with peculiar care. In that respect the ingenuity of mankind is singularly conspicuous, whether we consider the diversity of garments made use of, or the various substances of which they are composed. They may be classed under the following general heads: 1. Shirts; 2. Waistcoats; 3. Coats; and 4. Great-coats, or exterior garments of various descriptions.

1. The use of *shirts*, though formerly peculiar to the rich, has now become universal. It is much disputed what material for making them ought to be preferred. Shirts made of linen are certainly comfortable wear, but are not calculated for countries where the perspiration is violent, as they are apt to retain it, and they occasion an unpleasant sensation, if worn in that state. Cotton shirts are preferable to linen, in regard to perspiration, though they are also disagreeable after it is excited, and in point of economy, they are not so durable. The advantages of woollen shirts have already been sufficiently explained. Shirts made of hemp are recommended to the common people, on account of their durability; but they are not so proper when the perspiration is very great.

One of the principal disadvantages of shirts arises, from their being often made too narrow in the collars and wristbands. The latter occasions a fulness of the veins, weak-

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* *Bracelets* are generally fixed by ladies over the styloid process, and small head of the inferior extremity of the *ulna:* they are less worn by fat, than by thin persons; because in the latter, they serve to conceal, or to render less remarkable, the ancle-like projection.—*Vaughan on Modern Clothing*, p. 42.

and, indeed, it ought to be more generally adopted by them.

5. *The upper Extremities**.

According to the European fashion, the thighs, or upper extremities of the male sex, are generally covered, with either breeches or pantaloons, articles of dress well calculated for that part of the body, when they are properly made, and of fit materials.

Light or strong woollen cloth, or silk, according to the season, are certainly the articles best calculated for this part of dress. Nothing, indeed, can be more reprehensible than those tight leather breeches, which are worn by young men of fashion, either for the purpose of riding, or for shewing off their shape. They are got on with so much difficulty, as to be highly unpleasant, and such a tight covering must be injurious to the circulation †. Nor are leather breeches in any respect calculated for one of their principal professed objects, namely, that of riding ‡, for they are too hot in warm weather, and when they get wet, become extremely disagreeable. For riding, articles made of strong cotton ought to be preferred, and for common wear, either silk or woollen. Strong cotton breeches, when washed, shrink so much, that they ought to be made *very large* at first.

As nothing can be more injurious than that tightness about the knees, which must be the necessary consequence of breeches when they are too closely fitted, pantaloons or loose trowsers, are on the whole to be preferred; and it is unfortunate, that so useful an article is not more general. They ought to be sufficiently wide, and made of a thin cooling substance in summer, such as nankeen, or the like; and of warm elastic cloth in winter. Pantaloons, though not a court or formal dress, are, however, becoming more general§.

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*. Some apply this term to the arms and hands.

† Tight leather breeches frequently cause a numbness and coldness in the external parts of the thighs and hips, and are a very improper and injurious article of dress.—*Vaughan on Modern Clothing*, p. 45.—Leather, indeed, is an improper substance for this part of dress; for, on account of its close texture, it is apt to check insensible perspiration.—*Willich's Lectures*, p. 379.

It is said, that their advantages consist in their elasticity, and thickness, which prevents them from forming folds, and galling the rider, and that in long rides, and hunting matches, they are superior to every other. But these advantages are not exclusive, and do not sufficiently compensate for the objections to which they are liable.

§ *Coxalia*, or trowsers, were worn by the Anglo-Saxons, and it appears, the testimony of many ancient authors, that the Gauls, Britons, and other tions, wore a garment which covered both their thighs and legs.

Drawers are greatly to be preferred to lining, with this article of dress; not only on account of cleanliness, but as they can be changed according to the season, and made either cooler or warmer*.

It was formerly the practice to have the waistband of the breeches very tight, in order to keep them up, but this was a very injurious fashion, and fortunately has become no longer necessary, since the invention of *braces*. Great care, however, ought to be taken, not to make or keep the braces too tight, which may occasion stooping. This ought particularly to be attended to by the young and the growing.

6. *The lower Extremities.*

The articles of dress by which the lower extremities are principally covered, is called a *stocking*. When it only covers the foot, it is known by the name of *sock*.

It appears that stockings were in use among the Anglo-Saxons, as far back as the eighth century, though it is not easy to discover the materials of which they were composed†.

The stockings worn by the Norman nobility, were a very expensive part of their habit. William Rufus disdained to wear any worth less than a merk, which was nearly equal in value to ten pounds of our present money‡.

Stockings, made even of the best materials, must be injurious, if they are either too short in the feet, or so wide that they must be folded in the shoes. It is said that the stockings of children, in petticoats, should never cover the knees, as it has a tendency to increase their size, and to render them preternaturally thick§; but this is disputed.

Stockings are made of various substances, as cloth, wool, thread, cotton, and silk.

Stockings were originally made of cloth. Silk stockings

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and very much resembled our breeches and stockings united. This species of close trowser, was both graceful and convenient, and discovered the fine shape and turn of their limbs to great advantage.—*Henry's Hist.* vol. i. p. 472.

* The Emperor Augustus wore drawers, *fæminalia*, in the winter season, and they were also worn by our Saxon ancestors, more especially those of high rank.—*Strutt*, vol. i. part 2. p. 38.—But it does not appear that drawers were in general use in this country prior to the ninth century.—*Ditto*, p. 33.

† Strutt, vol. i. part 1, p. 13.

‡ Strutt, p. 104.

§ Willich's Lectures, p. 282.

were introduced into Britain in the reign of Henry the Eighth, or of Queen Elizabeth. It was some time after the introduction of silk, worsted, and thread stockings, before the cloth stockings were discontinued[*].

Worsted stockings, either made of a thicker or thinner texture, according to the seasons, are certainly preferable to every other sort, being better calculated to absorb, and to exhale, the noxious humours emitted by the pores of the feet. Cotton, linen, or silk, may be used externally for show, but none, the most healthy excepted, ought to have any thing but wool next their skin, the feet being one of the chief conductors of perspiration from the body, and it is necessary to promote so salutary a secretion[†].

The importance of warm stockings cannot be better enforced, than by the following fact, that those persons whose legs and feet are for the most part cold, seldom enjoy a good state of health. Hence it is observed, that woollen under-stockings, worn by people of tender constitutions, to keep up, by their warmth, an equable circulation in the extreme parts, must prevent many a fit of pain, sickness, and low spirits, which they would have felt without such a precaution[‡].

The custom of wearing stockings made of cotton or linen, has been condemned as in various respects exceptionable.

The connexion between the feet, and many of the most important parts of the human system, as the head, the stomach, &c. it is said, is such, that the gout, and various other disorders, may be the consequence of cold feet and legs, the necessary effects of wearing cotton, linen, or silk stockings. Cotton is somewhat better than linen, but is much inferior to wool, which is alone calculated to absorb and exhale the noxious humours emitted by perspiration, from that great emunctory, the feet. Attention to this part of dress is of more importance than is commonly imagined.

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[*] Strutt, vol. ii. p. 342, 343, and 378.

[†] Woollen socks, and woollen stockings, as soon as this additional article of dress shall be found necessary, should always be given to children. Silk, cotton, or thread stockings, are far from being so well calculated to promote insensible perspiration in the lower extremities, or to favour the motion of the fluids to the upper parts. They are even injurious in case of sweat, either from exercise, or the nature of any individual's constitution. Instead of suffering the offensive moisture to escape, as worsted would, they retain it in close contact with the skin, increase its putrescent tendency, and not only check all farther perspiration, but cause a re-absorption of a part of the matter already perspired. Worsted stockings may be worn thicker according to the state of the weather; and if the display of greater finery be thought indispensible for young gentlemen, or young ladies in their *teens*, a pair of silk stockings may be drawn over the woollen ones, to gratify parental vanity.—*Buchan's Advice to Mothers*, p. 172.

[‡] Mackenzie's History of Health. Note, p. 148.

Both cotton and linen stockings are plentiful sources of uncleanliness. Let any one desirous to see it proved, wear cotton stockings one day, and worsted the next, and afterwards say which was most free from humidity and smell. The cotton will be found always saturated with the perspiration of the feet much more than worsted. Cotton sooner rots than linen, and cotton stockings will not last nearly so long as worsted.

Those who wear cotton stockings ought, from regard to delicacy, as well as health, to change them once a-day, even if they sit still; and more especially if they walk abroad, as motion increases perspiration*.

In regard to silk stockings, their use is only calculated for show. Indeed, they are so thin, and such easy conductors of heat, that they are never worn alone by prudent people, but over other substances†.

In order to make up for the coldness that must result from the use of the thinner and finer sorts of stockings, it is very general to have under ones made of worsted; and those made of fine wool, from their superior softness and warmth, are greatly to be preferred.

The *pedules*, or *socks*, were appropriated to the feet, as the Latin name plainly indicates. They were generally worn with trowsers, and occasionally also, with stockings, especially by the clergy, who were obliged to officiate both by day and night in the churches‡. Sometimes they are worn in bed by those who are apt to have cold feet.

As stockings would be apt to fall down, unless made of very elastic materials, it has been found expedient, tó prevent any risk of that sort, by means of *garters*. The tight manner in which garters are usually tied, is highly injurious to the circulation.

7. *The Feet.*

Though volumes have been printed on the art of shoeing horses, yet, with the exception of a particular treatise, " On the Proper Form and Size of Shoes," written an.

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* Vaughan on Modern Clothing, p. 107.

† Ibid. p. 109.

‡ Strutt, on the Dress and Habits of the People of England, vol. i. part 1, p. 46.

1781, by the celebrated Camper, very little attention has been paid by literary men, to this important article of human clothing.

1. It has been contended by some, that the feet ought not to be covered at all; that nature designed the toes to be as free in their motion as the fingers; that our feet would be more comfortable, easy, and useful, if we were not at the greatest pains to deprive them of their elasticity and vigour; and that the numerous nerves, crossing the feet in every direction, plainly evince, that nature has endowed them with particular powers, of which we can scarcely form an adequate conception.

But in answer to this, it has been observed, that the feet being more exposed to injury than any other part of the body, require to be well protected; that the perspiration of so important an emunctory of the body, ought to be particularly attended to, and preserved against the effects of wet, which, if accompanied by cold, is so highly injurious; and that the feats exhibited by naked savages, can furnish no precedent for civilized life. The importance of having the feet well protected, with a view to health, is justified also, by an adage attributed to, or at least sanctioned by the celebrated Boerhaave, "*Keep your feet warm**, your head cool, and your body open, and bid defiance to medicine."

2. Besides the stocking, which is of a slight and loose texture, the feet are protected by various sorts of coverings, made of so strong a material as leather. The first article made use of for that purpose was *sandals*, worn in primeval ages, for the protection of the sole merely. This was afterwards improved, so as to form what is called a *shoe*; the shoe is superior to the sandal, both as it covers the whole foot, and allows the toes and heel to move. It was afterwards extended to the buskin, or half-boot, which covers part of the leg, without injuring the calf. The buskin was early succeeded by the full-boot, which is an essential article for horsemen.

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* It is indispensibly necessary to keep the feet warm: 1. Because they are the great emunctory of the human body, and perspiration there ought to be encouraged rather than otherwise: 2. Because they are the most remote part from the heart, and the quickness of the circulation of the blood decreases, according to that distance. Stockings made of animal wool, promote both perspiration and warmth, and, for the same purposes, it is proper to prevent all moisture from without, by means of water-proof shoes, provided with thick cork soles for the winter, or with elastic socks of horse-hair.—*Willich's Lectures*, p. 269.

Some of the Celtic nations had no other shoes but a piece of the skin of a horse, cow, or other animal, tied about the feet, with the hair outwards; and it was observed, that some British troops in Canada, who had adopted this mode of covering their feet, universally escaped being frost-bitten, whilst many of those who wore shoes lost their toes and their feet.

Boots made too small, and of thick hard leather, are so pernicious to health, and so disagreeable in walking, that no person of common sense will confine himself in them, for the silly purpose of showing the exact shape of his legs*. Instances might be adduced to prove, that tight boots have occasioned death†.

Instead of boots, some wear gaiters, which are of use, because, without some such covering, whilst the lower, and sinewy part of the leg is kept warm, the calf, or fleshy portion, must feel cold. Being made of cloth, they are elastic.

Besides the articles above enumerated, the Greeks and Romans were accustomed to wear leather cases above their shoes, which are supposed to be the *callopedes* spoken of by the ancient Latin authors. They were sufficiently large to receive the foot, with the common shoe upon it. They are now known under the name of *galloshes* (from the French word *galloche*), and in many cases are to be recommended; for instance, to persons (as lawyers, physicians, professors at the universities, clergymen), &c. who are obliged to walk abroad in wet weather, and have no opportunity of changing their shoes.

All these articles are fit for being made use of out of doors, or in company, where ceremony is necessary; but in the house, and on common occasions, slippers are worn, and are found highly convenient, on account of the ease they give.

3. Shoes should be adapted to the natural shape of the foot, neither too large, which would cause a shuffling kind of pace, nor too small‡, so as to cramp motion, give present pain, and prepare the parts for greater sufferings. Shoes of that description never occasion corns, or the painful consequences arising from nails growing into the flesh, nor any of those excruciating maladies which may be

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* Vaughan on Modern Clothing, p. 45.

† Dr. Fuller's Hist. of Berwick, p. 306. Strutt, vol. i. part 2, and vol. ii. Introduct. p. 106.

‡ Se pede major erit, subvertit, se minor uret.—*Horace.*

traced to the tight pressure of the toes, and suspended circulation in the feet.

The pernicious effect of wearing small shoes is extremely obvious[*]. They occasion corns and other disorders in the feet, and render the bones of the feet immoveable.

Ladies were formerly accustomed to wear high-heeled shoes. It might enable them to walk up hill better, but they could not walk so well on plain ground, nor walk down hill, without danger of falling. These shoes are now happily relinquished.

In regard to the shape of shoes, they ought to be broad in the soles, particularly under the toes; they should be wide and sufficiently long, so that the foot can easily get in, without the assistance of any instrument; the soles should be thick, the heels low, and the upper leather soft and pliable[†].

4. The substance of which shoes should be made, ought to be sufficiently compact, to prevent the water from penetrating it, ought to be so elastic and soft as to admit an easy motion of the whole foot, and ought also to be well calculated for the soil, the weather, and the labour or exercise in which it is to be used[‡].

The leather shoe, when not made too tight, is a most ingenious and salutary invention. Whilst it protects the foot from injury, it does not cramp the circulation; but when improperly made, it is the source of serious mischief, occasioning those excrescences called corns, which are always painful, detrimental to health, from the diminution of exercise which they occasion, and which have sometimes terminated in death.

In gouty cases, shoes made of felt or cloth, are recommended, as superior even to leather for pliability. In the

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[*] To walk with ease, and not to injure the feet, it is necessary to avoid either extreme, that is to say, the shoes should neither be too wide nor too tight. The first is a fault rarely gone into, but the second is but too common, as small feet are considered by many in Europe, to be a beauty; but by still greater numbers in Asia. By pinching the feet, the circulation is stopt, the noxious matter that ought to be perspired at that great emunctory, is driven back into the circulation, corns are produced, the feet are rendered unpleasant, and it becomes impossible to walk well, or to any distance.—*Conservateur de la Santé*, p. 175.

[†] The size and shape of the shoe, is a matter of great importance. They ought to be the size of the foot, and accommodated to the degree of motion or exercise, and to the nature of the soil, and place in which we wear them; circumstances which are at present too little attended to. A shoe that is bigger than the foot, prevents a firm step; while one which is too narrow, occasions pain and troublesome corns.—*Willich's Lectures*, p. 283.

[‡] Willich's Lectures, p. 288.

Saxon times, shoes with wooden soles were worn by persons of the most exalted rank*, and are well calculated for cold and moist weather. Sometimes they are rendered more durable by the assistance of nails†. They certainly cannot be accounted a pleasant wear; but when the ground is wet, they are attended with this advantage, that they keep the feet perfectly dry. On the other hand, in frosty weather, they often occasion severe falls.

5. As one of the principal objects in covering the feet, is to keep them dry‡, it may be proper to state the various measures which have been suggested for that purpose. In Sweden they use, between the sole of the shoe and the stocking, the bark of the birch tree, which admits of no wet. In other countries, a kind of hair cloth, or a piece of cork, adapted to the size of the foot, is applied to the same purpose. It is with the same view, that galloshes, which have been already described, were invented. They are well calculated for careful people, who lead regular lives, and who run little risk of losing them; but if, after having been adopted for some time, they were afterwards by any accident, neglected to be worn, it might occasion a serious illness. Various attempts have also been made to fortify shoes and boots against wet, and there is a species of boot, worn by fishermen, which is impervious to water‡.

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[*] Strutt, vol. i. part 2; and sometimes still in France.

[†] Ibid. p. 49.

[‡] *Cloggs*, or shoes with wooden soles, are used in the southern parts of Scotland, and the northern parts of England, more especially in the winter season. The upper part consists of very strong leather, the under part, of soles of timber, about an inch and a half thick. They are very cumbersome, but dry and warm, and reckoned very conducive to health. A pair for a man costs four shillings, and for a woman two shillings and eight-pence. A person wearing these shoes, is carried much farther from the ground than with common ones, and as the wood resists dampness, the feet, of course, retain their natural heat, by means of which the active labourer, can remain with impunity, for a whole day, in deep and wet ground.—*Fuller's Hist. of Berwick*, p. 376.

[§] Dr. Rush states, that he met with one man about 80, who defended his feet from moisture, by covering his shoes, in wet weather, with melted wax, and another who, for the same purpose, covered his shoes every morning with a mixture composed of the following ingredients melted together. Lintseed oil a pound, mutton suet eight ounces, bees-wax six ounces, and rosin four ounces. The mixture should be moderately warmed, and then applied, not only to the upper leather, but to the soles of the shoes. This composition, the old gentleman informed the doctor, was extracted from a book entitled, "The Complete Fisherman," published in England in the reign of Queen Elizabeth. He had used it for twenty years, in cold and wet weather, with great benefit, and several of his friends who had tried it, spoke of its efficacy in keeping the feet dry, in high terms.—*Rush's Medical Inquiries*, vol. ii. p. 318. Bellamy's patent water-proof leather answers the same purpose; and the invented shoes fastened with nails.

fluities of dress; and the shift, together with the *robe* or gown, are the only articles used in summer, during which season the dress is so light, that before a breeze, every part of the person is described as by a wet drapery[*]. In winter, the pelisse, or close cloak, or the more humble shawl, contribute to the protection of the fair wearer. But such a dress is only calculated for warm climates, and it is incredible what number of fine women, (more especially in the northern parts of Europe), have fallen a sacrifice to a fashion so ill calculated for cold, or frozen regions. But, to a certain extent, the alterations which have lately taken place in female dress, afford strong proof of good sense and taste; and a becoming regard to health, simplicity, and elegance, seems now to have more influence over female fashions, than absurdity, caprice, or the desire of concealing any personal deformity[†].

As, by the present fashion, the petticoats worn are thin and light, the use of flannel drawers in winter, and linen or cotton ones in summer, has been strongly recommended, as likely to be highly beneficial.

Collars and necklaces were formerly often fixed so tightly round a beautiful neck, that, after occasioning much pain, they were necessarily, though reluctantly, relinquished. They were often so tight as to break, whilst the ladies who wore them were dancing.

Tight shoes are still too fashionable, though highly injurious, more especially to young women, whose toes, (the motion of which, in infancy, is nearly as easy as that of the fingers), are too often squeezed together, whence corns and other disorders arise. Yet shoes too loose are uncomfortable, and even hazardous.

Ladies' habits are an article of dress not unbecoming, when properly made, though it gives some women a masculine appearance.

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[*] See Pinkerton's Recollections of Paris, vol. ii. p. 106, &c. Formerly the Parisian ladies carried about with them what they called a *ridicule*, or bag for holding their handkerchief, and other useful articles, as it was unfashionable to wear pockets; but latterly, even the ridicule has been abandoned, and the handkerchief is often carried by a brother, lover, or freind. "Who is that tall fellow who always walks with you?" said a mother to a daughter. The answer was, "My dear madam, must I not blow my nose?" *Ditto.*

[†] It is to be observed, that the thin dresses now worn by women are no new invention. The Tarentine garment, formerly used by the Greek women, and occasionally even by the men, is said by Lucian to have been white and comely, and so thin, that the form of the body and limbs might be discovered through it.—*Strutt*, vol. ii. Introd. p. 124.

3. *Rules for Children and Young People.*—This important subject has been fully treated of by a variety of authors; but as it is one of peculiar importance, on which the lives of thousands, and even of millions depend, it is necessary to discuss it at some length.

The celebrated Cadogan, in a pamphlet on the Nursing and Managing of Children, recommended the following dress for infants at the breast, and young children: A light flannel waistcoat, without sleeves, made to fit the body, and tie loosely behind, to which there should be a petticoat sewed, and over this a kind of gown made of any light, thin, flimsy material. The petticoat should not be quite so long as the child, the gown a few inches longer. There should be but one cap on the head, which may be made double, if it be thought not warm enough. The whole head-dress should be so contrived, that it may be put on at once, and neither bind nor press the head at all. All those swathes, bandages, stays, and contrivances, most ridiculously used, to close and keep the head in its place, and to support the body, ought to be laid aside, for nature, *exact nature*, never produced her chief work, a human creature, so carelessly unfinished, as to want those cumbrous aids to make it perfect. Shoes and stockings are perfectly useless; indeed they not only keep the legs wet and nasty, if they are not changed every hour, and often cramp and hurt the feet; but a child also would stand firmer, and learn to walk much sooner without them. They cannot be necessary till the child runs out in the dirt. There should be a thin flannel shirt for the night, which ought to be every way quite loose. Children in this simple, pleasant dress, which may be readily put on and off without teazing them, would find themselves perfectly easy and happy, enjoying the free use of their limbs and faculties, which they would very soon begin to employ, when thus left at liberty. This dress should be put on as soon as they are born, and they should be continued in it till they are three years old.

The dress of children should certainly be *light*, *simple*, and *loose*. By being as light as is consistent with due warmth, it will neither encumber the infant, nor cause any waste of his powers; in consequence of its simplicity, it ill be readily and easily put on, so as to prevent many es and tears, and much exposure to cold; and its loose- will leave full room for moving and stretching those little s which are too often contracted, and for the growth and expansion of the entire frame. A piece of flannel round the navel, a linen or cotton shirt, a flannel petticoat, and a linen or cotton robe, are soon put on; and where fastenings are requisite, they should consist of tape, without the dangerous use of pins[*].

Dr. Faust maintains, that the garments of children ought not to impede the free and easy motions of the body, or prevent the access of fresh air to strengthen it. He adds, that the body grows more healthy, and becomes stronger, and less liable to disease, when children are not kept too warm, nor protected against the inclemency of the weather by many garments[†].

According to Dr. Adair, children from their birth should be habituated to light clothing, not only by day, but in bed: he asserts, that nothing contributes more to form the constitution. Infants and children are less apt to have their perspiration checked, than persons who are more advanced in life, and therefore less apt to catch cold[‡].

In regard to *boys*, silly mothers are very impatient to strip them of their loose frocks, and in order that they may look like little men, make them wear tight hussar dresses, which gives them a much nearer resemblance to monkeys, than to human beings. It is really astonishing, that health and growth should be perversely sacrificed, to a premature anxiety for giving them fashionable smartness[§]. Children thus clothed, are too apt to ape the customs and actions of older people, a practice unbecoming their age, and dangerous to their health and morals.

There is an odd notion entertained by some, that clean linen, and fresh clothes, draw forth and rob children of their nourishing juices. But it is evident, that they do nothing more than imbibe a little of that moisture which their bodies exhale. Indeed, were it the case, it would be of service to them, as children, in general, are too abundantly supplied with moisture. Their clothes, therefore, cannot be changed too often, and it is right to have them clean every day[||].

5. *Rules for Manhood.*—Little occurs upon this subject.

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[*] Buchan's Advice to Mothers, p. 161.

[†] Faust's Catechism of Health, p. 29.

[‡] Adair's Medical Cautions, 2d edit. p. 359.

[§] Buchan's Advice to Mothers, p. 165.

[||] See Cadogan's Tract on the Nursing and Management of Children, in Buchan's Advice to Mothers, Appen. p. 366.

It is evident that those who are in the prime of life, require less clothing than persons advanced in years, because in the former, the circulation of the blood is more equal and vigorous, and of course the generation of heat in the body is quicker, and of greater extent, than is the case in old age*.

During the state of manhood, therefore, if persons are in good health, either very warm clothing in the day, or covering at night, is highly improper. Such persons, however, should not be too lightly clothed, nor, relying too much on the strength of their constitutions, expose themselves imprudently to catch cold, as the violence of the disease they may be seized with, is generally in proportion to the vigour of their vital powers. Hence any disorder with which they may be afflicted, is so often rapid in its progress, and fatal in its termination.

It has been justly observed, that though it may not be proper for very young persons to be accustomed to warm clothing, yet the case is materially different in regard to those who are getting beyond the prime of life. Indeed, in this cold and variable climate, it is a good rule, *after persons have attained the age of thirty, or forty*, to be rather well clothed than too thinly†.

6. *Rules for Old Age.*—Old age cannot be too warmly clothed, but care should be taken to avoid an opppressive load, too heavy for feeble limbs to carry with ease. It is therefore necessary to have, for the latter periods of life, clothes as warm, and at the same time as light, as they can be made,—and the use of fur itself may often be recommended in cold seasons of the year. Indeed as, after manhood, the force of the circulation is considerably lessened, the clothing by day, and the covering by night, should be gradually increased, for many of the diseases of advanced life are produced by obstructed perspiration‡.

Warm clothing, more especially warm bed-clothes, are proper to preserve or increase the heat of old people. From the neglect of the latter, they are sometimes found dead in their beds in the morning, after a severe night, in cold countries. These artificial coverings will be the more necessary, where the head has been deprived of its natural covering. Great pains should likewise be taken, to keep the feet dry and warm, by means of thick shoes, more especially when walking out of doors in moist weather*.

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* Fuller's History of Berwick, p. 305.
† Essay on Health, p. 15.
‡ Adair's Medical Cautions, 2d edit. p. 389.

Dr. Rush well observes, that the dress of old people should not only be clean, but more elegant, or at least neater, than in youth or middle life. It serves to divert the eye of spectators from observing the decay and deformity of the body, to view and admire that which is always agreeable to be looked at.

7. *Rules for Sickness.*—Persons of delicate and irritable constitutions, and invalids in general, are apt to have the perspiration checked by very slight causes. Until their constitutions, therefore, have been strengthened, and they have been gradually habituated to air and exercise, they ought rather to exceed, than be deficient in the quantity of clothing; and, more especially in cold or damp weather, their bodies ought to be protected against the sudden and severe impression of either. They ought, on that account, to commence wearing in the beginning of September, a flannel waistcoat over their shirt or shift, and, towards the end of October, it may be worn next the body, taking care to defend the lower limbs by the use of woollen drawers and worsted stockings. Their under waistcoat should always be thrown off at night, and changed once or twice a-week. Instead of cutting it away by degrees, when the weather becomes more mild, it may be worn over the linen, and at length totally left off till the subsequent autumn†.

In regard to clothing, as a remedy in sickness, an ingenious author, in a medical dissertation, has given an account of all the diseases in which woollen clothing has been found of service; as, 1. Gout; 2. Consumption; 3. Hypochondriasis; 4. Dyspepsia; 5. Catarrh; 6. Rheumatism; 7. Palsy; 8. Colicks‡; 9. Dysentery; 10. Asthma; 11. Diabetes; 12. Melancholy§, &c.; and Dr. Adair affirms, that the application of a double, treble, or even quadruple piece of flannel upon the breast, in coughs; on the belly, in colicks, diarrhœas, &c. and to any of the limbs affected by rheumatism, affords a degree of relief beyond what might be expected, especially if it be sprinkled with a little lavender water, or soap liniments, and a moderately hot smoothing iron be run over it repeatedly. The powerful determination made by this means from the affected organ is, perhaps, greater than that of a blister, and certainly more permanent, as the means may be applied more frequently[*]. In cases of that nature, fleecy hosiery may be of service.

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* Rush's Medical Inquiries, vol. ii. p. 317.

† Adair's Medical Cautions, 2d edit. p. 393.

‡ It is stated in the Code of Health, vol. ii. Appen. p. 70, that one Coble, derived benefit from using flannel, who had been subject to colicks.

§ Disputatio Medica inauguralis de vestitu laneo; Johanne H. Gibbons, Pennsylvaniensi, Auct. Anno 1786. The celebrated Boerhaave used to say, that nobody suffered by cold, save fools and beggars; the latter not being able to procure clothes, and the former not having sense to wear them. It is certain, that in many cases, where the powers of medicine have failed, the patient has been cured by wearing thick shoes, a flannel waist-

7. *Rules according to the Climate.*—It is not necessary to observe an exact proportion, between the quantity of clothes we wear, and the degree of latitude which we inhabit, but, at the same time, proper attention ought to be paid to it, as well as to the openness of the country, the frequency and violence of storms[†], and other circumstances of a similar nature.

It has been justly observed, however, that each climate seems to furnish productions, both in regard to food and clothing, best calculated for the use of those who live under its influence, and that in the winter time we naturally prefer garments that sit close to the body, and in summer those of a wider form. On the same principles, the people of the north prefer the former, those of the south, the latter. Hence, whilst the Greeks and Romans, unless in time of war, preferred a wide and loose garment, the Huns and Goths adopted a dress that was tight, and fitted close to their body[‡].

In regard to climate, it is proper that the clothing should keep the body in that degree of heat which is most agreeable, as well as most suitable to the functions and actions of health. These are performed with the greatest regularity, ease, and pleasure, when its heat raises the mercury

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coat, and drawers, and a pair of under stockings, at least during the cold seasons of the year. Too warm clothing, however, in health, often occasions sickness, many times increases the distemper, and hastens death.

[*] Adair's Medical Cautions, 2d edit. p. 499. The idea of benefit from repeated dyings of flannel, is absurd.

[†] Buchan's Domestic Medicine, 18th edit. p. 84.

[‡] Manuel de Santé, par Robert, vol. ii. p. 433. As a proof how much dress may differ, according to the nature of the climate, we find it recommended by Polybius, an ancient physician, that in Greece, clean clothes should be worn in winter, but in summer, *clothes dipped in oil.* See Code of Health, 2d edit. vol. ii. p. 75. This is recommended as a useful precaution in hot climates, to diminish the effects of excessive perspiration.

to about 97° or 98°. It is fortunate that the powers of generating or separating heat in animals, and consequently of generating cold, are in a certain proportion to each other, and to the necessity for them. Hence it is, that in summer and winter, nothwithstanding the great difference of climate, the heat of our bodies is almost alike.

The best method of preventing the bad effects of cold, is to clothe ourselves so as to be slowly affected by either heat or cold[*].

9. *Rules according to the Seasons.*—In regard to the seasons, it is highly imprudent to make it a rule regularly to change one's clothing on particular days, as if every year, in regard to weather, were uniformly the same. Some difference, however, should be made in this respect, notwithstanding the authority of Boerhaave[†], and the example of the celebrated Newton, who is said to have worn camlet every day of the year. But the changes should be gradual, and should not be carried to any extreme, until an alteration in the weather takes place.

10. *Rules according to Custom and Fashion.*—Fashion may be defined, something approved of and established by the custom of the public in general, or at least the most distinguished persons in it. It is often introduced by some individual to conceal some personal blemish, or to set off some imaginary beauty. It must therefore be ever varying, according to the taste and interests of those who take a lead in dress. Buffon has justly observed, that, taking mankind in general, there are a greater number of deformed, than of well proportioned bodies, and a greater number of ugly, than of pretty faces, consequently there are a greater number of individuals, to whom attention to dress is necessary, and to whom a change of fashion may be desirable.

In regard to clothing fashionably, it may in general be remarked, that though it is highly improper to run any risk of injury to one's health, out of a servile compliance to the modes and customs of the times, yet, on the other hand, it is idle to go to a contrary extreme, for the sake of singularity. Indeed, if the subject of healthy clothing were once thoroughly explained, and properly understood, there is every reason to believe, that fashions would be introduced, sufficiently adapted for the climate of the country, and the comfort and health of every individual in it.

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[*] Vaughan on Modern Clothing, p. 81, 85.

[†] The clothing, when regulated according to the seasons, should not be altered by rapid changes; and I am, in this climate, (that of Great Britain), rather of the opinion of the famous Boerhaave, whose directions were, not to give up winter clothing before the eve of midsummer's day, and not to take it again later than the day following. Letter from the Chev. Edelcrantz.—*Code of Health*, vol. ii. Appen. p. 26.

11. *Rules for the Clothing of the Rich.*—In regard to the dress of the upper ranks, calculated for the climate of this country, the following plan is in general to be recommended: 1. A light coloured hat in summer, and a stronger black one in winter. 2. A flannel under-waistcoat, to be worn next the skin in winter, during the day time, but always to be thrown off at night. In summer, the flannel waistcoat should, with the young and middle-aged, be put over the shirt. After the age of 40, one may use either a flannel pectoral or stomacher, until the flannel age arrives. 3. The shirt may be made of linen or cotton. The latter is to be preferred in hot climates. 4. A waistcoat of chamois leather has been found of great use, in protecting the body from piercing colds, and is so light, that it need not be thrown off during the summer. 5. The coat should be made to sit perfectly easy, particularly about the arms. In summer, lighter colours, and a shorter coat, should be worn than in winter, during which latter season, the cloth should be more substantial. 6. Pantaloons are preferable to breeches. They should be made of thick cotton or woollen cloth in winter, and of nankeen or thin cotton in summer. Flannel drawers should be worn in winter, and linen or cotton in summer. The pantaloons should be so high, as to go under the waistcoat two or three inches both before and behind. They should be easy about the waistbands, and kept up by braces. Leather breeches should be seldom if ever worn. 7. The stockings should be warm, and if the outer ones are of silk or cotton, the inner should be of worsted. No garters should be used either above or below the knee. The strings of the drawers may answer for that purpose. 8. The shoes should be made easy, but thicker and stronger in the winter season than in the summer. Strings or narrow ribbons are preferable to buckles. Galloshes may in some cases be of use. Tight boots ought particularly to be avoided, but the buskin, or half-boot, is well calculated for common wear, and, with the assistance of over-alls, may be made a comfortable dress for riding. 9. Great coats are well adapted for the rainy season of the year, but spencers are preferable when the weather is dry and cold.

12. *Rules for the Clothing of Labouring People.*—It is

evident that the dress of the labouring classes, as adopted by many of the English peasantry is, in various respects, a model of utility. They have two very strong jackets, (or more if the cloth is thinner), or in some districts a smock frock, and they cast off one, or more of them, as they get warm at their work, and thus proportion their covering, to the labour in which they are engaged, and the effect it has had upon their bodies. They wear always very strong woollen yarn stockings, and strong shoes. On such clothing, cold, or even wet, can have but little effect; and it is their judicious management of this article, which enables them to bear with so little injury the hardships to which they are exposed. But instead of leather breeches, it would be of great importance to the hard-working peasant, to introduce fustian, or some other strong kind of cloth, which would be warm and lasting, and less pernicious when they get wet. The hats of the peasantry should be covered with oil-skin in wet weather. Clogs have been already recommended.

It is certainly of great importance, to contrive the best means of clothing the poor. It is to be considered, that if they get wet, they have not always the advantage of fuel to dry their clothes, nor perhaps have they any change of raiment in their possession. Hence they are liable to so many disorders, from which, by proper clothing, they might have been exempted.

In general, special care should therefore be taken, that all persons employed in husbandry, should have clothing adapted for the different seasons of the year. It is also material, that they should make it a rule, to put on their clothes immediately on their leaving off work, *whatever the warmth of the weather may be**.

13. *Hints regarding the Clothing of the British Army, with a view to Health.*—It is a point of the most material consequence, to investigate how far the dress worn by our soldiers and sailors, is sufficiently adapted to their respective professions. Such an inquiry is more particularly necessary in regard to the army, as our soldiers, besides their arms, are often obliged to carry heavy burdens, which they should be enabled to do with as little fatigue as possible. Much, in regard to that particular, must depend on the nature of their clothing. The standing regulations in that

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* Falconer's Essay on the Preservation of the Health of Persons employed in Agriculture, p. 15 and 21.

respect do credit to the judgment of those by whom they were recommended, and are as judiciously framed as the circumstances of the case, and the trammels they were bound by, would admit of.

The following observations on the different articles that should constitute the dress of the soldiers, the most advantageous form of each, and the different materials of which they ought to be made, are submitted to the reader's consideration.

1. *The helmet form* seems to me by far the most graceful, the most uniform, and most useful head-dress for a soldier. In point of *appearance*, there can be no comparison, and in regard to *utility*, no shape can be better calculated than the helmet, to protect the eyes from the influence of the sun*, or the head from the inclemency of the weather. To render it light, which is essential, particularly for infantry, it should be made of leather, or of lackered felt†. The officers ought to wear the same kind of head-dress with the men, as any marked distinction between the officer and the soldier, is, in time of service, highly exceptionable. The grenadiers might be sufficiently distinguished from the rest of the corps, by higher crests to their helmets, and different coloured plumes.

2. *The coat* should be made to fit *perfectly easy*, and as the object of wearing it is warmth and protection, it should not be docked and cut short, so as hardly to yield any protection to the limbs. When even the skirts are short, they afford some protection, and the pockets in them are of some use. The waistcoat, for regiments serving in Europe, should be made of strong substantial cloth, with sleeves of milled serge‡, so that in good weather, or when working, the soldier might wear his waistcoat alone, and save his coat.

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* It has been found, that British soldiers suffer much in regard to their eyes, and in various other respects, in hot climates. How can it be otherwise, when so little attention is paid to the adapting of their clothing, their arms, and their accoutrements, to the change of climate? Scarlet cloth is evidently improper in such climates. Black glazed hats or caps, perhaps too tight for the head, perfectly destructive. The musquet, instead of shining with dazzling lustre in the sun, should be made brown; and the glazed cartouche-boxes should be covered with cloth. Were these particulars properly attended to, the British army would be as healthy in a hot climate as other troops. Being less accustomed to heat, however, more attention should be paid to counteract, by every possible means, the baneful effects so likely to result therefrom.

† It is said that a new kind of head-dress, consisting of stripes of whalebone, covered with different materials, has been invented, which would be much more durable, and not more expensive than the present.

‡ By the standing regulations, this sort of waistcoat is only given to ser-

3. I have no doubt that a flannel shirt is the proper wear for labouring people of all descriptions, and more especially for those who are much exposed to the inclemency of the weather, consequently it ought to be recommended to soldiers. But linen shirts may be allowed, if, when soldiers are on service, they wear a flannel waistcoat, either above, or next their skin, according to the season.

4. There is no part of the soldier's dress more to be objected to than the *black stock**, which they are at present obliged to wear. The loose cravat or neckcloth is infinitely preferable, and if tied behind, or with a proper knot before, would look equally well. It might be made of coloured linen or cotton cloth, to suit the facing of the corps, which would give the whole an uniform appearance†.

5. In regard to clothing for the lower part of the body, I am much inclined to think, that instead of breeches and stockings, it would be much better to have pantaloons and socks. The pantaloons should button only at the ancle, should come down upon the shoes, and should have a strap to go round the shoe, to connect it with the pantaloon. The socks should be of worsted, and should go no higher than the shoe. Stockings can hardly be kept up without garters, or the breeches being made very tight at the knees, either of which are injurious, and with pantaloons of the shape above described, there would be no occasion for either. Pantaloon drawers should be worn, made

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jeants, and a kersey waistcoat, with serge sleeves, to the common soldier. But a substantial waistcoat is more necessary for the soldier, than even the serjeant, and the difference of expence cannot be material.

* The black stock is considered by medical men to be a most pernicious part of the military garb, more especially as soldiers are often obliged to turn their heads, without moving their bodies, for, in consequence thereof, the diameter of the jugular veins is so much diminished, that a proper quantity of blood cannot return to them from the vessels of the head, and of the brain. Indeed those soldiers who, when on actual service, are compelled to go to the extreme of martial appearance, and are obliged to have every article of their uniform remarkably tight, particularly their stocks, waistcoat, and knee garters, rarely preserve their health to the end of the campaign.—*Willich's Lectures*, p. 376. To think of putting on stiff leather stocks, *with clasps*, round the neck of a human being, will, I trust, be considered incredible some years hence.

† As a proof of the mischief arising from tightness about the neck or the knees, we are told, that the commander of a Danish body of soldiers, having obliged his troops to tie their stocks about their necks, and the garters below their knees, *as tight as possible*, from the idea, that the high colour of their faces, and the thickness of the calves of their legs, would give them the appearance of health and strength—they almost all fell into disorders, of which many of them died. See Conservateur de la Santé.

of linen in summer, and of flannel in winter. The outer pantaloons should be made of Russia duck, or strong cloth. Such pantaloons, with drawers, according to the season, would unite warmth, cleanliness, ease, strength, and economy. The price of the stockings, which would be thus saved, should be laid out in providing better shoes.

6. There is no part of the military garb of more importance than the *shoe*. How is it possible for a soldier to march well, when his feet are pinched within an unnatural compass? Easiness in this respect is essential, and cannot be too strongly inculcated*.

7. If the pantaloons above described are adopted, gaiters would not be essentially necessary, at least for keeping gravel or small stones out of the shoes, but half-gaiters might be of use in wet weather, for preserving the lower part of the pantaloons from dirt, and would prevent such frequent washing as might otherwise be required.

8. As to the exterior garment, instead of great coats, a mantle or plaid of any durable colour might be adopted, particularly on service, as it would answer for protection against the inclemency of the weather during the day, and for bedding at night. The mantle or plaid, properly put on, has a peculiarly graceful appearance on horseback, when mere parade is in view, and is very easily rolled up in actual service†.

Such is the military garb which I take the liberty of recommending. It would not be, in any material degree, more expensive than the present, and would, at the same time, possess many advantages over it. If adopted, with any judicious alterations which experience may point out, it would tend much to promote the health and comfort of the soldiery, and would thus materially augment the military strength of the empire.

It may be proper to add, that it would not be expedient, to make any material alteration in the dress of Highland corps. The national garb they wear, renders them more anxious to maintain the character they have acquired, and the novelty of their dress, has a striking, and even terrific effect, on those who have not been accustomed to it.* The *philibeg*, or belted plaid, is inferior however, to the trews, or Highland trowsers, which is convenient in hot, in cold, and in wet weather, while the plaid, if loaded with moisture, chaffs and cuts the limbs, and exposes them to the attacks of insects.

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* Some would carry their attention to the shoes of the soldiers so far, as to have them fitted with the greatest nicety, and by lasts for each individual soldier. The soldier's shoe should have a firm unyielding sole, and be made very wide. The vacuity to be filled up with horse hair, or dry hay, or rags.

† The great-coat was invented for being used on horseback, but, most preposterously, our dragoons wear cloaks, and our infantry riding-coats. The cloak is a better defence against rain, and, in action, either great-coats, or cloaks, ought to be thrown off.

As it is of the utmost importance, not only to have the best plan for clothing the army in regard to form, but also to arrange the means of having that plan properly carried into effect, the following measures are suggested for that purpose.

1. That the permanent clothing board shall be directed to revise the system for clothing the British army, and shall make such alterations therein, as shall appear necessary for the health of the soldier, and the benefit of the service.

2. That the board shall ascertain the rates at which the different articles can be furnished, and the rates at which the same may be contracted for.

3. That there shall be fifteen, or any other number of licensed clothiers, under the authority of the commander-in-chief, and of the permanent clothing board, to any one of whom the colonel may apply, twelve of these to be licensed in England and Scotland, and three in Ireland.

4. That the colonel shall contract for the clothing as at present, and be responsible for its goodness, that no unnecessary quantity is ordered, and that no clothing is wasted

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* The Scotch Highlanders have no claim to be considered, either a braver or stronger race of men, than other descriptions of His Majesty's subjects, but they have been inured to a worse climate, and consequently must be hardier, and being reared up on plainer food, must be less liable to disease. It is a most unfortunate circumstance, therefore, that such a race of men should be on the brink of being lost to the country, and driven to emigration, because the proprietors of Highland estates have no inducement to retain a burdensome population on their property, when they are not permitted to have the credit of bringing them forward into the public service, according to the ancient ideas of feudal connexion. Whereas, if the Highland chiefs had the satisfaction of raising Highland corps, officered by Highland gentlemen, or those who could speak the national language, there would soon be an end to emigration. The Highlands of Scotland would then be able to furnish twenty thousand gallant soldiers, on any emergency. Indeed it would be desirable, not only to preserve the men, but even their music and their language. A story is told, which strongly illustrates the advantage to be derived from preserving the Gaelic. A gentleman in the western islands met a Highland soldier, who had returned on furlough, to visit his friends; and congratulated him on the fame which his corps had obtained in Egypt. "How could it be otherwise," he exclaimed, "when our officers told us, *in Gaelic*, to remember the honour of our country!"

or lost. In consideration of which trouble and risk, he shall receive 2000*l.* per annum.

5. That as that sum is not adequate to emoluments to which he is at present fairly entitled, he shall receive a guinea per day of additional pay, and 50*l.* per annum for every 100 men actually serving beyond 500. Thus it would be for the interest of the colonel to have his corps complete.

6. That the license of every clothier, who does not fulfil his contract properly, shall be withdrawn, and that no new license shall be given him, on any consideration whatever, and that the penalty in the contract, which should not be less than one thousand pounds, shall be rigorously exacted.

As, under this system, no clothing will be paid for, that is not really used, a very considerable saving will thence accrue to the public, which will amply compensate for any additional expence which the proposed plan may occasion; but when it is considered, how much longer the soldier will be fit for duty, when he is clothed, *with a view to the preservation of his health*, as well as of military service, the benefits which the public may thence derive, in the course of a long war, *are incalculable.*

14. *Rules for the Navy.*—This branch of the subject may be comprehended within a very narrow compass. A round hat or cap seems to be the best adapted for the sailor. Loose trowsers are indispensible. A jacket of good strong cloth is necessary in cold climates; but, above all, a flannel shirt is an article essential to a seaman. When it is considered how often sailors are roused from profound sleep, and that in the midst of the perspiration usual in that state, they are at once exposed to the night air, to rain, and to cold, it is impossible that they must not suffer from such a change, unless their bodies are fortified by that best of coverings, flannel next the skin. Boat cloaks are likewise necessary for a certain number of the crew.

15. *Miscellaneous Rules.*—These relate, 1. To the colour of dress; 2. To mourning dresses; and, 3. To avoid discrepancy in the dress worn.

1. The colour of dress is far from being an unimportant article. Clothes of a light colour have the least attraction for heat, and therefore are the most proper in hot weather. Substances of a very smooth and shining surface, strongly reflect the rays of the sun, which cannot penetrate through them. Hence the advantage, in hot climates, of hats covered with oil-skin, particularly of a green or white colour,

also of wearing smooth and shining shoes, glazed gowns, and the like.

Dazzling colours are offensive, and a person who suffers from weak eyes, will injure them still more by wearing crimson or scarlet, or being much in company with others thus dressed.

In regard to colours, it has been observed, that blue, from its tenacity, has always been considered as an emblem of truth, hence the proverbial expression, "*True blue will never stain;*" whereas green has ever been accounted a mark of inconstancy, from its aptitude to change*.

2. It is almost a universal practice among all nations, to express a regret for the death of those for whom one has felt an attachment, by a change of dress; and in Europe, in general, black is the colour that denotes affliction. From the thinness usual in black cloth, the change of dress is sometimes attended with injury to the health of those, who are compelled by custom to put on a mourning habit.

3. It has been well observed, that nothing can be more ridiculous than a discrepancy of dress; for instance, a bare head, a thick roll of muslin about the neck, and several vests of waistcoats, yet thin breeches, perhaps silk stockings, and thin shoes†.

CONCLUSION.

It would be of much importance to the interests of humanity, to have so interesting a subject as that of clothing, explained at greater length, than can be expected on the present occasion. But in a Code of Health and Longevity, it would have been improper to have entered more minutely into so extensive an inquiry‡.

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* Strutt, vol. ii. p. 326.

† Friendly Cautions, by Dr. R. W. Johnson, p. 7.

‡ There are some useful hints on clothing, in Sir William Fordyce's Treatise on Fevers, p. 36. Also in Doctor Curry's Observations, p. 84, where he justly observes, that clothing possesses no warmth in itself, but merely prevents the heat of the body, from being carried off by the air, and other surrounding bodies, faster than it can be supplied by the process of respiration.

CHAP. II.

HABITATION, OR PLACE OF RESIDENCE,

WITH SOME OBSERVATIONS ON THE CONSTRUCTION OF A HOUSE BEST CALCULATED FOR THE PRESERVATION OF HEALTH.

THE important subjects to be discussed in this chapter, may be considered under two heads: 1. The general nature of the habitation, or place of residence; and, 2. The particular construction of a house, best calculated for the preservation of health.

SECT. I. *General Observations regarding a Habitation, or Place of Residence.*

THERE is no being that can so easily accommodate himself to a residence in different countries, or on whom the vicissitudes of climates seem to have less influence, than man. For this, he undoubtedly possesses many peculiar advantages; for he can not only be maintained by a greater variety of food than any other creature, or can alter his clothing according to the climate where he resides; but he can erect habitations, suited, in regard to warmth, to the different circumstances in which he may be placed. Though man, however, can exist in all climates, yet, it is evident, that some situations must be better calculated for him than others, and consequently, in them he has a better chance of preserving health, and attaining longevity.

The healthiness of a place may be considered in the following respects: Whether it is, 1. In a hot, a cold, or a temperate climate. 2. Whether in a high or in a low situation. 3. Whether it has a favourable or injurious exposure. 4. Whether on the sea-shore, on the banks of a lake or a river, or at a distance from water. 5. Whether in the neighbourhood of woods. 6. Whether in a dry, a clayey, or a marshy soil. 7. Whether with an abundance or a scarcity of fuel. 8. Whether in a wet or dry atmosphere. 9. Whether on a continent, in a large island, or in a small one; and, 10. Whether in a town, a village, or in the country.

1. *Nature of the Climate.*—The effects of climate on the human body, may be considered under the three general heads of the hot, the cold, and the temperate*.

In regard to hot countries, an instance is quoted, on authority entitled to some attention, of a native of Bengal, Numas de Cogna, who died in the year 1566, at the astonishing age of 370 years†, (at any rate, he was probably of an age far beyond any example in modern times); yet hot countries, in general, though in various respects calculated for the enjoyment of health, or exemption from disease, particularly during infancy, are far from being favourable to long life.

One of the strongest proofs that can be adduced of the latter position, is this, that when Kien Long, Emperor of China, in the year 1784, ordered all the old men to be collected in his extensive dominions, through the greater part of which the climate may be denominated hot, yet only four were brought to him who exceeded a hundred years of age‡. The population of China, according to the best and most recent account, amounts to above 200,000,000. The proportion, therefore, of persons exceeding a hundred, was very small indeed. There is every reason indeed to believe, that a far greater number of individuals, beyond 100 years, are now living in Scotland alone, where there are not even two millions of inhabitants.

It is not wonderful that hot countries should be unfavourable to longevity. The age of puberty is early. The body is enervated both by the relaxation of the fibres, and the violent perspiration to which it is subjected; and the food is of a less strengthening nature.

There are various diseases peculiar to hot countries, as fevers, liver complaints, &c. which often occasion an early dissolution of the frame; but, on the whole, from the temperate manner in which individuals in these climates are obliged, and generally inclined to live, they usually enjoy better health than in colder latitudes. Their food is procured with little bodily exertion; they require but little clothing or shelter; and those who live in the humbler ranks of society, have seldom any thing to disturb their minds, or to agitate their passions.

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* Professor Finke, of Lingen, in Germany, has printed, in three volumes octavo, an Essay towards a General System of Medical Geography; or a collection of treatises on medical topography, arranged in a systematic manner.

† Easton on Longevity, Introduction, p. 17. He quotes two respectable Portuguese authors in support of this fact.

‡ See Memoires concernant les Chinois.—Three thousand of the oldest persons in the empire were entertained by the Emperor, on the 14th February 1785; and though, among these, there were only four above 100, yet there were 192 persons in all, at the head of five generations. They were assembled, that the Emperor might shew them some marks of his paternal benevolence.

Hot countries, also, are peculiarly favourable to the rearing of children. The management of infants is very simple, their diseases are few, and seldom dangerous*. We are informed by an author of credible authority, that it is frequent, on the Coast of Guinea, to see fathers who have two hundred children living at once†. This must certainly be in a great measure owing to the plurality of wives; but unless the climate were favourable to health, such numbers could not be reared under any circumstances.

The Coast of Guinea, it is true, is unwholesome to strangers ‡, but to the natives, we are told, that it is "*mighty healthful,*" and that few are afflicted with any distemper §. Scarcely any of the inhabitants, however, arrive at old age. They become old much sooner than Europeans, and appear in a state of decrepitude at sixty. One instance only of longevity can be given with any degree of certainty. It was of a person named Addoo, who resided near the river Sherbro, and who remembered, when a boy about fifteen years of age, to have been in the island of Barbadoes. This occurred during the reign of Queen Anne, or, as he expressed it, "when the King of England was a woman." Consequently, he must have been (in 1796) near one hundred years of age. He was alive in the year 1802.

On the whole, hot countries are not prejudicial to the health of those who are born in them, and who are accustomed to the climate, though in general unfavourable to longevity.

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* Winterbottom's Account of Sierra Leone, vol. ii. p. 219.

† See Smith's New Voyage to Guinea, printed anno 1744, p. 202.

‡ Persons born in the temperate climates, and who pass any considerable part of their life in the torrid zone, seldom attain longevity. The descendants of Europeans, however, sometimes live long in those very climates: and it is a remark in the West Indies, that "when a woman puts on a red woollen petticoat, (which they do when advanced in life), it is almost impossible to kill her."

§ See Smith's Account of Guinea, p. 184.—Bosman's Description, Letter viii.—And Lord Kames, in his Sketches of the History of Man, book i. sketch 1, observes, that the African negroes, though living in the hottest known countries, are yet stout and vigorous, *and the most healthy people in the universe.*

Cold climates, on the other hand, are unfavourable to general health*. The scurvy, consumptions, colds, and other disorders of such climates, are numerous and fatal, and would be still more so, were it not for the precautions which are taken to guard against them. The labour that is required to procure food is so great, that many are injured by it. The number of children that die, is proportionally more than in hot countries, and consequently, population does not increase so rapidly. But as the food is nourishing, and as it requires great strength to resist the severities of such a climate, those who do survive, often attain a greater age than the inhabitants of warmer regions†.

Among the instances of longevity in cold countries, those from Norway and Russia are perhaps the most remarkable. In regard to Norway, of 6929 persons who were buried in 1761, 63 had lived to the age of one hundred‡. As to Russia, there died, anno 1801, 726,278 souls, of whom 216 were one hundred years of age, and 220 above it. Four are stated to have been above one hundred and thirty years old.

What a contrast to the hot countries above described, where it is so uncommon to see a person who has reached even the sixtieth year of his age!

The temperate climates, however, are best calculated for the preservation both of health and long life. Every circumstance combines for that purpose. The air, the diet, the clothing, the nature of the habitations, the education of the people, their turn of mind, the gradual alterations of weather, the certain and regular vicissitudes of the seasons, all proclaim the advantages of temperate climates. In them, as for instance, in Greece and Italy[*], the form is the most complete; the body the most vigorous; the mind the best formed; the passions the best regulated; and the human species, in every respect, reaches, when well governed, the highest degree of perfection.

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* Too great a degree of cold, however, is prejudicial to longevity. In Iceland, and the northern parts of Asia, as Siberia, men attain at the utmost, to the age of only sixty or seventy.—*Hufeland*, vol. i. p. 153.—See also, p. 160.

† Hufeland, vol. i. p. 158, thus expresses his opinion upon this subject. In districts, where mortality in general is very great, individuals may attain to a greater age than in places, for instance, the warm countries of the East, where general mortality is less. Mortality being there, on the whole, very small, hence their extraordinary population; and infancy, in particular, suffers there much less, on account of the continually uniform and pure temperature of the atmosphere, yet a much smaller proportion of old people are found in these countries, than in the northern, where mortality in general is greater.—Lord Bacon says, that they live longer in cold and northern countries, than in hot, because the skin is more compact and close, and the juices of the body less dissipable, and the spirits themselves less eager to consume, and in better disposition to repair, and the air (as being little heated by the sun beams) less predatory.

‡ Easton on Longevity, p. 142.

2. *Situation.*—Next to climate, much depends, in regard to health, upon the particular situation where the individual resides.

Lord Bacon was the first who recommended elevated situations, as being conducive to health, partly grounding his opinion on the long life which is generally enjoyed by birds, owing to the purity of the air they breathe. He does not recommend, however, the tops of mountains[†], but rising grounds, such as Arcadia and Etolia, where the inhabitants are reported to have lived long.

Recent discoveries have explained the cause of this circumstance. Where the air is driven about, and is not suffered to become stagnant, it is better calculated for respiration. There is less of that portion of air which is prejudicial to health, and more of that portion which is favourable to the vital principle. Besides, the malignant vapours of marshes, and the heterogeneous particles, or miasmata, which they contain, when carried about by winds, or raised to a certain height in the air, are deprived, at some distance from their source, of their baneful influence, either by dilution or combination.

The celebrated Pallas informs us, that in a province of Russia, he saw many old people in the elevated districts; whereas, in the plains, in that very neighbourhood, they were not distinguished for longevity.

Buffon's authority may also here be quoted, in support of these doctrines. He observes, that there are generally more old men in high than in low countries. The mountains of Scotland, of Wales, of Auvergne, and of Switzerland, have furnished more examples of extreme old age, than the plains of Holland, Flanders, Germany or Poland[*].

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[*] Arcadia and Etolia, and other parts of Greece, were celebrated for longevity; and many of the most distinguished Greeks, as Pythagoras, Pindar, Sophocles, Anacreon, Plato, Zeno, &c. &c. attained great age. Italy, however, was in some respects, superior to Greece; for, in the 76th year of the Christian era, when a census or numbering of the people took place, there were 265 persons beyond 100, in that part of Italy that lies between the Po and the Appennines.

[†] This recommendation is certainly well founded, in so far as respects Great Britain at least; for very elevated situations being most exposed to the vicissitudes of this varying climate, must, consequently, be peculiarly injurious to general health. More depends upon a current of pure air than upon mere elevation.

But though places, the situation of which is high, have in general purer and healthier air, than those which stand low, yet this must not be admitted without certain limitations. The rule cannot be carried so far as this, that the higher the better. The greatest degree of habitable height, for instance, near the Glaciers, on the Alps, is, on the contrary, prejudicial to health; and Switzerland, without doubt the highest land in Europe, has produced fewer instances of longevity than Scotland. For this there are two reasons: First, the atmosphere, at a great height, is too dry, ethereal, and pure, and consumes, therefore, more speedily: Secondly, its temperature is too variable; heat and cold succeed each other too rapidly; and nothing is more unfavourable to duration of life than very sudden changes, more especially if accompanied with moisture[†].

In regard to rocky places, they are not convenient to build houses upon, notwithstanding their durable foundation; for such situations are frequently moist, are excessively hot in summer, and piercing cold in winter; and all such extremes ought to be guarded against[‡].

3. *Exposure.*—The ancients paid much more attention to the situation of a city, or of a house, in regard to its exposure, than is usual in modern times, probably owing to this circumstance, that the art of manufacturing glass not having been discovered, they were not able to enjoy the advantages of light, and, at the same time, to protect themselves from the inclemency of the seasons, as the moderns can do.

Hippocrates advises, that a man who comes a perfect stranger to any city, should consider well its situation, and how it stands with respect to the winds, and the rising of the sun, before he pitches upon a place of residence[§]. He then explains the effects which may result from a city being of a southerly, a northerly, an easterly, or a westerly situation.

In regard to villas, or country houses, Varro directs, that they should, if possible, be placed at the foot of a mountain covered with woods, in such a manner as to be exposed to the most healthy winds, and to enjoy the sun in winter, and the shade in summer*.

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[*] Vol. ii. p. 481.

[†] Hufeland, vol. i. p. 59.

[‡] Arbuthnot on Air, p. 208.

[§] See Clifton's Translation of Hippocrates, "Of air, water, and situation," p. 1, 3, &c.

Columella is very particular in the directions he gives regarding the situation of a country-house. He lays it down as a general rule, that the front of the edifice should be turned away from the winds which are hurtful, and exposed to such as are salutary†. He observes, how much depends upon such particulars, as that place must be reckoned unhealthy, which is not exposed to the sun and to dry winds, by which that nocturnal hoar frost is dried up, which rusts and defiles every thing on which it falls, and which is so pernicious to men, to animals, and to vegetable life in general‡.

Nor is the situation of a house in town, a matter of trifling importance; at least, in a northern climate, that position ought to be preferred, which fronts the sun in winter, and receives, in that unpleasant season of the year, all its beneficial influences.

4. *Situation in regard to Water.*—Among the particulars of the greatest importance, respecting a place of residence, is its situation with regard to water; whether it be near the sea or a lake, or a river, or at a distance from water; and also, whether the water in the neighbourhood be wholesome or the reverse.

The air, in the neighbourhood of the sea, is particularly distinguished by its salubrity. In that situation, in cold countries, there is more regularity of temperature, and more mildness; and in warm ones, less intense heat, than in inland places, in other respects similarly circumstanced; and the breezes, which come from the ocean, bring with them a number of minute particles of salt, which, though unfavourable to the growth of trees, yet are supposed to have, in many cases, very beneficial effects on the organs of respiration in animals§.

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* Varro, de R. R. lib. 1, cap. 12.

† The effects of the different winds on the human body merit attention: they must differ so much in various countries, that no general system can be formed. There are some good observations upon this subject in Pansa's Aureus Libellus de Propaganda Vita, cap. xxviii. p. 107.

‡ Columella, lib. 1, c. 5. Lord Bacon, in his Essays, says, " he that
" builds a fair house upon an ill seat, committeth himself to prison; neither
" do I reckon it an ill seat where the air is unwholesome, but likewise
" where it is unequal; as you shall see many fine seats set upon a knap of
" ground, environed with higher hills round about, whereby the heat of
" the sun is pent in."

§ See Buchan's Practical Observations on Sea-Bathing, p. 165. The sea

Lakes, or large pieces of fresh water, are not, in general, considered to be so healthy as the ocean. The salt, in sea water, preserves it from corruption; and the exhalations from the ocean, are attended with less putridity than from a lake. At the same time, the lakes in Scotland may be considered as large rivers, because they are not stagnant, but are constantly receiving and discharging their waters. Hence there is no place in Scotland, where, proportionably for its population, a greater number of old people have been found, than in the neighbourhood of Loch-Lomond, which is the largest and finest piece of water in Great Britain. Indeed there is reason to believe, that large lakes, more especially in a mountainous country, temper the extremes of the atmosphere, (because water is of a more steady temperature than earth); and by promoting, at the same time, a free circulation of the air, are favourable to health and longevity[*].

Large rivers are, on the whole, favourable to health, if they do not stagnate[†]; but there is no air so pure and wholesome, as in the neighbourhood of a small stream, running over a rocky or a pebbly bottom. From the purity of such air, there is no means more likely to recover the health of the invalid, than to be often carelessly strolling along the margins of such streams.

Dr. Priestley observes, that the sea, and other large bodies of water, are important resources, which nature has provided for restoring the salubrity of the corrupted air. He found, that all kinds of noxious air were restored, by continued agitation in a trough of water, the noxious efflu-

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spray, unless in stormy weather, when it is too abundant, is not unfavourable to the growth of the smaller plants, but seems to have a noxious effect on the leaves of trees.

[*] In the Account of the Parish of Luss (see Statistical Account of Scotland, vol. xvii. p. 239), there are two lists of old people exceeding eighty years of age, amounting to twelve in number, and one aged seventy-eight; and it is there remarked, that some families in that district seem to have a hereditary right to long life, of which some examples are given. Some years afterwards, anno 1803, a very accurate list was made up of old persons in that parish, when it appeared, that out of a population of about 953 souls, no less a number than twenty-one exceeded eighty years of age. It has been remarked, both here and at other fresh-water lakes, that, from the greater lightness of the water, the waves are shorter, and more easily raised by the wind, than is the case at sea, where the water has more specific gravity.

[†] It is said, that when the plague raged in London, anno 1665, it never attacked those who inhabited the houses on London Bridge; and that many persons, for their security against it, lived in barges on the river Thames, where the air was purified by the rising and falling of the tide, twelve feet twice a-day.

via being imbibed by the water. Hence he concludes, that the agitation of the sea, and of large lakes and rivers, must be highly useful for the purification of the atmosphere, any noxious matter being absorbed by the water, and imbibed by marine and aquatic plants, or applied to purposes yet unknown*.

The vicinity of water is of material consequence, as that element forms so important a part of the diet of the people. This is a subject, however, that has been already explained (See Part I. Chap. II. on Liquid Food).

5. *Neighbourhood of Woods.*—Another circumstance to be considered, with regard to the situation of a place of residence, is the woods in its neighbourhood. To be surrounded by large forests is not a desirable situation, but to have some wood adjoining, is certainly of service. Trees, and other vegetables, during the day, exhale oxygen gas, or pure air, and, consequently, contribute to make the air better calculated for the use of animals. They are also of service from the shelter they afford from cold winds, and from the shade they yield against the heat of the solar rays†. But though wood is very agreeable at a proper distance from a house, it should never be planted too near it, especially in a flat country. At the same time, where the trees are very lofty, like those in America, and without underwood, or where the surface is not rendered moist by them, a woody country may be inhabited with safety.

6. *Soil.*—One of the most important circumstances, connected with the salubrity of any place of residence, is the soil in its neighbourhood, whether dry, clayey, or marshy.

Of these, the marshy is unquestionably the most pernicious, more especially if connected with clay, or much stagnant water, as it frequently emits carbonated hydrogen gas, the most deleterious of all the airs, in considerable quantities. Even a gravelly situation may be rendered unwholesome, by the air of a neighbouring marsh brought thither by winds.

In regard to marshy situations in general, Dr. Price has written a short essay, containing proofs of their insalubrity, and confirming a paper by Dr. Priestley, on the noxious effects of stagnant water. The proofs he adduces are taken from tables, given by M. Muret, of several parishes in Switzerland, in which a comparison is made between mountainous and marshy countries. The difference is very great indeed. One half of all born in the mountainous district, live to the age of 47, whereas the same proportion in the marshy parish live only to the age of 25. In the hills, one in twenty of all that are born, live to 80; in the marshy parish, only one in fifty-two.

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* See his Experiments and Observations, vol. i. § 2 and 4.

† It is also said, that vegetation contributes to lessen the humidity of the atmosphere, and thus to render it more wholesome. The water which falls in dews, &c. is decomposed; the pure part, or the oxygen, is emitted or exhaled, whilst the hydrogen is imbibed by the plants.

Clayey soils, in general, even where they are not troubled with stagnant water, are not favourable to health. As no rain can penetrate through them in wet weather, they must always be incommoded with surface-water, in consequence of which, vegetation is chilled, the atmosphere is rendered cold and unpleasant, and the climate is less favourable to health.

A dry soil and subsoil, however, which immediately absorb the rain that falls, is undoubtedly the healthiest situation for a place of residence, in so far as depends upon soil. The sandy or gravelly soils have this advantage in great perfection. A chalky soil is likewise very wholesome, as its absorbent powers tend greatly to purify the superincumbent atmosphere*. It is also considered an advantage, that a house should be distant from any great mines, or beds of minerals, more especially if they are wrought, as both the air and the water are apt to be affected by them.

7. *Fuel.*—The importance of fuel, particularly in cold and damp countries, cannot be questioned; and, in such climates, it is particularly desirable to be in the neighbourhood of that essential necessary of life. Fuel is of importance, 1. For cooking victuals. 2. For warmth. 3. For removing damp, which is of more consequence than even giving heat; and, 4. For affording light as well as heat, there being many a cottage, where, after sun-set, the light they have is principally from the fuel they burn.

Of the different sorts of fuel principally used, as wood, turf, and coal, the first is the most wholesome when well dried; the second is not pleasant to those who are not accustomed to it; in regard to the third, where the quality is good, it furnishes most warmth, and is peculiarly fitted for the purposes of cookery.

8. *The Atmosphere.*—The healthiness of a situation must also, in some respects, depend on the nature of the atmos-

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* Buchan's Practical Observations concerning Sea-bathing, Preface, p. 16, Observations, p. 169.

phere, whether it is dry or moist, hot or cold, inland or maritime[*].

Egypt, so much celebrated in ancient as well as modern history, certainly possesses one of the driest climates known, its fertility arising, not from rain, but from the overflowing of the Nile. It is a country, however, very unfavourable for health. Ireland, on the other hand, which is a wet or damp country, is justly distinguished for the strength, the size, and the healthiness of its people[†]; a sufficient proof that moisture is no enemy to health, where other circumstances are not unfavourable to it.

On this subject, Hufeland justly remarks, that too great a degree of dryness, as well as too much moistness, are unfavourable to duration of life.—Air, therefore, which contains a moderate degree of moisture, is the best for attaining to great age. The reasons he assigns are as follows: Moist air, being in part already saturated, has less attractive power over bodies, that is to say, consumes them less. Besides, in a moist atmosphere, there is always more uniformity of temperature; and fewer rapid revolutions of heat and cold are possible. Lastly, an atmosphere somewhat moist, keeps the organs longer pliable and youthful; whereas, that which is too dry, brings on much sooner aridity of the vessels, and all the characteristics of old age[‡].

9. *Continents or Islands.*—Another point of view, in which this subject may be considered, is, whether a place of residence, situated on a continent, in a large island, or in a small one, is the most healthy.

Continents have great advantages, in consequence of the general regularity of the seasons; for uniformity in the state of the atmosphere, particularly in regard to heat, cold, gravity, and lightness, contribute, in a very considerable degree, to the duration of life.

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[*] These particulars have already been partly discussed. See Part I. Chap. I. on Air.

[†] See various instances of longevity in Smith's account of Waterford, p. 375 History of Cork, p. 427, and History of Kerry, 419. Doctor Watkinson has collected a number of observations regarding the salubrity of that island. He states, on the authority of Rutty, that though the Irish live in a constant *balneum vaporis*, yet the moisture and temperate quality of the air is a great advantage to them; for it not only secures them from the pernicious effects of heat and drought, but likewise defends them from the ill effects of excessive cold and dryness, all which are productive of more acute and violently inflammatory disorders than are to be found in Ireland. In favour of a moist climate, it is to be observed, that, from the bills of mortality kept in Dublin, it appears that the greatest numbers of persons are buried in dry years; and that Wintringham's observation, in regard to England, that the moist seasons are the most natural and healthful, may be extended to Ireland.—*Philosophical Survey of the South of Ireland*, p. 375 and 377.

[‡] Vol. i. p. 161.

Large islands are certainly liable to greater variation, but they possess, at the same time, some advantages over a continent. The high winds to which they are often exposed, drive away all malignant vapours, so that epidemical distempers are extremely rare; whilst the influence of the sea air is extremely beneficial. Doctor Ingenhouz made a number of experiments, to discover the relative salubrity of the air, at sea, on the coast, and inland[*]; and, as far as could be determined by the eudometer, he found, that the air was most pure at sea, next in purity on the coast, still less so, with some exceptions, in the interior of the country, and worst of all in the neighbourhood of marshes and swamps. He also found, that the healthy appearance, and the appetite of the inhabitants, varied in a similar ratio.

There are few countries that, for their population and extent, can produce more instances of greater longevity than Britain and Ireland. In this respect they are acknowledged to be superior to the greater part of the European continent; and Whithurst asserts, on information which he says he received from the best authority, that the natives of the continent of North America, are shorter lived than those of Great Britain and Ireland; and that a British constitution will last longer in America than a native one[†]. This assertion, however, is contradicted by an intelligent American author, who contends, that the probabilities of life, *in all its stages*, from its commencement to the utmost possible verge of its duration, are higher in the United States of America, than in such European countries as are esteemed the most favourable to life; and it cannot be doubted, that the facts he adduces, are strongly in favour of that opinion, though it must be observed, that any circumstance of that sort, may be attributed to the inconsiderable proportion of the inhabitants of America who reside in towns, compared to those who live in the country[‡].

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[*] Nouvelles Experiences et Observations sur divers objets de Physique. Par Jean Ingenhouz, &c. Paris, 1789. See also, Buchan on Sea-bathing, p. 163. The great component parts of the atmosphere, namely, its oxygen and azote, are in almost all situations nearly the same. See Part I. Chap. I, on Air.

[†] Whithurst's Inquiry into the Original State and Formation of the Earth, second edition, in quarto, printed at London, anno 1786, p. 166.

[‡] See Barton's Observations on the Probabilities of the Duration of Human Life in the United States of America, published in the Transactions of the American Philosophical Society, vol. iii. p. 25. The intelligent Dr. Wa-

But small islands, and peninsulas surrounded by the sea, and free from marshes, have, at all times, been justly accounted the cradles of old age. The facts in proof of this assertion are so numerous, that it would tire the patience of the reader to go through them all distinctly. Nor is this observation to be confined to one latitude; it extends over all. In southern climates, for instance, the observation holds good, in regard to the Bermudas, Barbadoes, and Madeira. And, in northern climates, it is found to be the case in the Western Islands of Scotland, and in the Orkney and Shetland Isles. Lord Bacon accounts for it by observing, that sea air heats and cherishes in cooler regions, and cools in hotter*.

10. *Residence in a Town, in a Village, or in the Country.*—The last circumstance to be considered, in regard to

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terhouse of Cambridge in New England, also states, that there is no region on earth, where the inhabitants attain a greater age than in that part of America. "The many instances of longevity," he adds, "which our country affords, are owing, perhaps, to the mediocrity of our circumstances. We are not rich enough to be very luxurious, nor so distressed by poverty as to be pressed prematurely to the grave. No man is overwhelmed with poverty in this happy country, unless he be a drunkard."

* 1. *Bermudas.* The inhabitants here live, some to an hundred years, and something upwards. Many do live till they are nigh an hundred, but few above. And, when they die, 'tis age and weakness that is the cause, and not that any disease attends them. *Lowthrop's Abridg. of Phil. Trans.* vol. iii. p. 561.—2. *Barbadoes.* Anno 1780, there was a dreadful hurricane at Barbadoes, when fifteen people lost their lives, four of whom were above an hundred, and one an hundred and fifteen. *Easton on Longevity*, p. 171.—3. *Madeira.* This island is remarkably healthy—Dr. Thomas Heberden, in Phil. Trans. vol. lvii. p. 461, has given us an account of the increase and mortality of the inhabitants of that island, from which it appears, that the expectation of the life of a child just born at Madeira, is about 39 years, which is more than double the expectation of a child just born in London. Only a fiftieth part of the inhabitants of Madeira die annually, whereas, in London, it is in the proportion of one to 20 three-fourths.—4. *The Hebrides.* It appears from Martin's description of the Western Islands of Scotland, that the inhabitants are healthy and long lived. He mentions one person in South Uist, aged 130, who retained his appetite and understanding to the last. Many persons in the Isle of Sky arrive at great age; but the Isle of Jura is the most remarkable for longevity; among several instances of which, it is mentioned, that one Gilmour Mac Crain lived to keep 180 Christmasses in his own house—5. *Orkney Isles.* Both from Martin's account of the Orkneys, and Wallace's description of them, it appears, that the natives are healthy, and that several have lived beyond a hundred.—6. *Shetland Islands.* In these they also arrive at a great age. Buchanan, in his History, (lib. 1,) mentions one Laurence, who lived in his time, who married at 100 years, and died at 140, rather of old age than of any distemper; and the inhabitants say, that one *Fairville* lived to be 180, and never drank any malt liquor, distilled waters, nor wine; his son lived even longer, and his grandchildren to a good old age.—*Martin*, p. 373.

residence is, whether it is best calculated for health, in a town, in a village, or in the country.

Large towns have been emphatically called *the graves of the human species*[*], and certainly they are not favourable to health and longevity. If a number of individuals, crowded into a room, render its air unwholesome, an immense population, assembled in a great city, must, to a certain extent, have the same effect, though the circulation of the air is not so completely impeded within the circuit of a town, as in a house or a chamber[†]. In towns also, great quantities of putrid matter are collected in the kennels and common sewers, in church-yards, in the shambles, in market places, and about the stables of the more opulent citizens. In large towns, and in their immediate neighbourhood, many unwholesome manufactures are carried on; the atmosphere is darkened with clouds of smoke, by which the light and genial warmth of the sun is frequently intercepted; and when, to these circumstances, are joined, luxurious manners, unwholesome food[‡], improper clothing, irregular hours, want of exercise, and, above all, the means which great towns furnish of gratifying to an extreme all the sensual appetites, is it to be wondered at, that the inhabitants of towns, and still more of great capitals, should be unhealthy and short-lived, and that, instead of keeping up their own numbers, it should be necessary for them, constantly to have recruits from the country, to keep up their population?

It may be said, that many old people are found in considerable towns, and even in large capitals, like London and Paris. But the proportion is very small; and it is more than probable, that the foundation of their health and strength, was laid in the country; and a good basis being once established, their constitutions were better enabled to resist the dangers of an unhealthy residence.

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[*] The Roman poet justly exclaims against

——Pericula mille
Sævæ urbis.

[†] The constitution of the generality of citizens may be denominated weak, irritable, and easily susceptible of diseased action; and when men are crowded together, to a certain degree, they engender diseases, not only fatal to themselves, but which are contagious, and therefore destructive to others.—*Buchan on Sea-bathing*, Preface, p. 7; also Work, p. 47.

[‡] This is a remark as old as Friar Bacon, who observes, that plants growing in a dunged soil, produce articles which sooner putrify than where the soil is not dunged; and that herbs and trees, growing in a good air, are also more remote from corruption. It is no wonder, therefore, that the milk, the flesh, the fruit, and the vegetables growing near a town, should be less wholesome than those which are produced in the purer air, and less corrupted soil of the country.

Villages, if properly situated, and kept under due regulation, are certainly favourable to health; but, for that purpose, they ought to be placed in a dry soil, on a shelving bank, near a running stream, the houses not too contiguous to each other, and in single rows, rather than in regular streets. Where villages are well situated, such is their superiority in regard to health, that, in all cases of accounts, the courts of law in England have determined, that in a given number of persons at two places, namely, a country village or the metropolis, the duration of human life in the village ought to be computed at fifteen, compared to ten and a half in London*.

By some it is affirmed, that man is by nature *a field animal*, and seems destined to rise with the sun, and to spend a large portion of his time in the open air; to inure his body to robust exercises, and the inclemency of the seasons, and to make a plain and homely repast only when hunger dictates†. But here the moralist goes too far. A country residence is certainly well calculated for mere existence; but what would become of all the pleasures of social life, and all the improvements of science and of art, if people were perpetually to live in a scattered or insulated state, and solely in the country? Though health ought to be preserved, it is not the only proper object of our attention.

The absurdity of such an idea has been well described by the celebrated Addison, who gives an account of a young gentleman, of a considerable estate, who had been educated by a tender mother with so much care for his health, that she made him good for nothing. Reading, she quickly found, was bad for his eyes, and writing made his head ache. He had got by these means a great stock of health, and nothing else; and, if it were a man's business *only to live*, there could not be a more accomplished young man in the whole country. Such men may really be called *field animals*, and indeed are of no manner of use, but to keep up their families, and transmit their lands and houses in a line to posterity‡.

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* Hints Illustrative of the Utility of an Insurance Company for the counties of Kent and Sussex. Printed anno 1804, p. 7.

† See Dr. Fothergill's Observations on Longevity, Annual Register, anno 1786, article Natural History, p. 69.

‡ The Spectator, No. 123.

To retire, entirely, or at least to spend the greater part of the year in the country, towards the conclusion of a busy and well-spent life, may, however, prove a wise and happy conclusion to these sublunary scenes*. In old age, quiet is desirable; and agriculture is an occupation which is sufficiently interesting to command the attention, without agitating too much the passions of the human mind. Though, in the severity of winter, old age may feel both shelter and society in a town residence, yet during the favourable seasons of the year, the country is preferable. Sir Hans Sloane, Fontenelle, and a few others, may be mentioned, whose lives were principally spent in cities, and yet extended to a great length. But in general the proportion is about two to one in favour of the country.

The proportion of People who die annually in Great Towns, in Moderate Towns, and in the Country, has been calculated as follows:

1. In great towns, from $\frac{1}{19}$ or $\frac{1}{20}$ to $\frac{1}{23}$ or $\frac{1}{24}$.
1. In moderate towns, from $\frac{1}{25}$ to $\frac{1}{28}$.
3. In the country, from $\frac{1}{35}$ or $\frac{1}{40}$ to $\frac{1}{50}$ or $\frac{1}{60}$.

This, however, must be understood with some exceptions, as moderate towns may be so ill situated, as to increase the proportions of deaths, and the proportion in great towns may sometimes be decreased by a sudden increase of healthy inhabitants in the prime of life†.

On the whole, we may conclude, that a place of residence calculated for health and longevity, should be, if possible, in a temperate climate;—in a situation moderately elevated;—if in Great Britain, with a southern exposure‡,

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* A country life, as Bacon justly remarks, is well fitted for long life; it is much abroad, and in the open air; it is not slothful, but ever in employment: it feedeth upon fresh cates, and unbought; it is without cares and envy.

The increase of population, also, where a country life generally prevails, is a strong argument in its favour. In some provinces of North America, the population is doubled in fifteen years, and over all that continent in twenty-five years. How different, in this respect, from towns, which require recruits from the country. *Price on Reversionary Payments*, vol. i. p. 276, and 277.—See Derham's Physico-Theology, vol. i. p. 263, note, regarding the great ages of people leading a country life; also Plot's Oxfordshire, c. ii. sect. 3, and c. viii. sect. 54; and Staffordshire, c. viii. sect. 91; also Phil. Trans. No. 310.

† Price on Reversionary Payments, vol. i. p. 296.

‡ By this means it will enjoy a higher average temperature, by several degrees, throughout the year.

—in the neighbourhood of the sea, or near a rapid stream or river,—having a command of water fit for drinking,—sheltered by trees, but not environed with extensive woods or forests;—with a dry soil;—in the vicinity of abundant fuel;—with a somewhat moist, rather than a very dry atmosphere;—in an island, rather than on an extensive continent;—and either in a well-planned village, or totally in the country.

SECT. II. *Of the Construction of a House the best calculated for the Preservation of Health.*

WHEN it is considered that a much greater portion of our time is spent within doors than without, it is a circumstance to be wondered at, that more attention is not usually paid to the construction of buildings with a view to health. Indeed there are few houses, whether of larger or smaller dimensions, where some particulars have not been neglected, and where some improvements might not be pointed out*. But a few general observations upon this subject are all that the limits of this work will admit of.

The construction of a house must depend upon the nature of the climate, and the ability or wealth of the person by whom it is erected. The ancient system of living in castellated houses, surrounded with moats and ditches full of water, is at last fortunately abandoned. They certainly were unfavourable to health, houses being thus environed with a moist and unwholesome atmosphere. The modern system, where ditches are not permitted, is infinitely preferable.

The principles on which houses ought now to be constructed are simple; they should not be, 1. too cold; or 2. too hot; or, 3. in the smallest degree damp; and, 4. the air within, should, if possible, be as pure as the air without†.

1. The means of excluding cold is much facilitated by

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* When the author presided at the Board of Agriculture, particular inquiries were made regarding the construction of cottages, and some valuable papers on that subject will be found in the Communications to the Board, vol. i.

† The rules regarding these points might be extended even to the apartments which are not inhabited; for store rooms and pantries in a house are extremely unwholesome, if provisions of various sorts, animal as well as vegetable, be kept in them, especially oil, candles, fat flesh meat, whether in a raw, boiled, or roasted state, pastry, fruit, &c. The larder is frequently very judiciously placed without doors.

the invention of glass, and the great improvements which have been made in the management of fuel: But the exclusion of the outward air is now carried to a most injurious excess, for the art of the carpenter is employed to shut it out as a dangerous enemy, instead of its being considered as a useful friend. The air within doors ought to be warmer than that without, because persons are usually in a state of less activity, and are often more thinly clothed, when breathing the former than the latter; but to carry the plan to an extreme is highly injurious, as it renders going out more dangerous than otherwise would be the case[*]. A habit of uniformity, in the application of heat and cold to an animal body, renders it more sensible of the smallest variation in either, while, by the habit of variety, it will become, in a proportionable degree, less susceptible of all such sensations[†].

2. To prevent the admission of too much heat into a house, is fully as necessary, in some countries, as the exclusion of cold in others. In Grand Cairo, for instance, various contrivances are adopted, to moderate heat, as fountains in the middle of their houses, pipes to convey fresh air by grottoes[‡], and high edifices by which their streets are shadowed from the sun. In India, during the hot season, the air in rooms is kept gently in motion, by what they call *punkas*, or fans, suspended from the ceilings, covered with cotton or silk, and having fringes below: They are kept in motion by a palanquin-boy. In China, also, we are informed, on the most unexceptionable authority[§], that during warm weather, they have no other door than an open matted skreen, and the windows are either entirely open, or of thin paper only. By this constant ventilation, kept up in their houses both by day and night, they obviate the

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[*] The following are the signs by which it may be known whether rooms be clean and contain wholesome air.

When there are no cobwebs in the corners or on the ceiling of the room, nor dust, nor straw, nor filth of any kind; when the windows are clean and clear, and no offensive smell or unpleasant sensation is experienced by a person who enters it, that has been just breathing the open air, we may conclude that it is as it ought to be.—*Faust's Catechism of Health*, p. 44.

[†] Observations on Animals, with respect to the power of producing Heat, by John Hunter, p. 22.

[‡] Arbuthnot on Air, p. 129. In Italy, in the construction of their houses, their whole attention is directed to guard against the summer heat, so that they are excessively bad winter houses. A gentleman had the water in his bason frozen for eight days successively in his bed-room at Pavia, a circumstance which never happened to him in Scotland. In towns subjected to great heats, high built houses and narrow streets are expedient.

[§] Barrow's Travels in China, p. 349.

ill effect that might otherwise be expected from the want of cleanliness, both in their houses and persons. This exemplifies Dr. Lyne's definition of a *wholesome house*, " where a dog could get in under the door, and a bird could fly in at the window."

3. Moisture is still more fatal than either heat or cold, which any person who sleeps for a single night in a damp room, (unless he has often been accustomed to such a circumstance), will soon experience. Hence, the necessity of making the roof secure, and properly filling up and cementing the walls with mortar; also avoiding the use of sea stones, which never lose the property of attracting moisture from the atmosphere[*].

4. The air also within the house ought, if possible, to be as pure as that without. 1. In the rooms where we usually stay; 2. In the rooms where we eat; and, 3. Above all, in the rooms where we sleep.

1. *Sitting Rooms.*—The most healthful, as well as comfortable apartments to the individual, are those which enjoy a pure and free circulation of air in summer, and the cheerful rays of the sun in winter; a proper size and height are also requisite to constitute a wholesome apartment, for low rooms are detrimental to health, particularly when inhabited by large families, or when the air is carefully excluded by close doors, shutters, curtains, &c.

The sitting rooms ought to be above the ground floor, or in the second story, and they should be so constructed, as to admit a free current of air[†], or at least they ought to be well aired, by opening the windows in dry weather, and leaving the doors open for a certain space of time every day. Sometimes it may be proper to make use of what is called *pumping the room*, or moving the door backward and forward for some minutes together[‡]. In mere sitting rooms, the air is in general sufficiently pure, the furniture being commonly kept clean, much fresh air being admitted every time the doors are opened, and there being no source of taint or corruption, excepting from the breath of those who live in them.

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[*] Dr. Valangin observes, that the bad effects of the moist and damp air of London, are not a little increased, by the constant washing and wetting of the insides of houses, which is carried to a most unpardonable excess in most northern countries, and shamefully neglected in warmer climates, where the practice of it would be most useful. *Treatise on Diet*, p. 43.—The moisture of a wet room or staircase, must evaporate into the surrounding atmosphere.

[†] Private houses ought to be perflated once a-day, by opening the doors, and windows to blow off the animal steams.—*Arbuthnot*, p. 209.

[‡] Willich on Diet and Regimen, p. 205 and 206.

2. *Eating Rooms.*—Every person must be sensible, that the air of a room is rendered impure by the steams of food, and that in proportion to the quality and quantity that is put upon the table[*]. The persons in the room are not sensible of the tainted atmosphere they breathe, yet any stranger feels it at once at his entrance, and it continues for a long time, until fresh air is admitted in considerable quantities. This circumstance merits particular notice in this country, where it is the practice to sit so long after dinner. Some individuals have adopted the practice of retiring into another apartment immediately after the dishes are removed, and there taking their dessert and wine; but, on the whole, that plan has been found so troublesome and inconvenient, that it has commonly been relinquished; and, indeed, it is only competent for persons of large fortunes, and whose houses are of large dimensions. The only other remedy is, that of opening the sashes of the window when the weather will admit of it, and the plan of letting down the upper sash is certainly to be preferred. I have sometimes thought, that ventilators might be contrived for the upper panes, with painted glass or some other ornaments, which, without disgusting the eye, might secure good air, and might be closed and opened at pleasure.

3. *Bed Rooms.*—But the most important apartment of all is the room for repose[†]. If we allow only eight hours in the twenty-four for sleep, though many persons, especially invalids, spend many more hours in their bed-chambers, we shall find, that during more than one-third of our time, we breathe the same stagnant impure air, highly impregnated with noxious effluvia. Nothing, therefore, can be more material, not only for invalids, but for persons in health, than

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[*] Where crowds of people, and great quantities of provisions dressed with the richest spices of the East and West, contribute to saturate the air with the most heterogeneous particles, which must render the atmosphere very unfit for persons in a delicate state. Strictly speaking, we ought not to sit in the room where we dine or take victuals, until it be aired again. Those who can afford this luxury, should be careful not to stay for hours together over their bottle in the dining room. The bad effects of such contaminated air, are not perceived by the persons continuing their libations after dinner, but are sensibly felt by any one coming in from the fresh air.—*Willich's Lectures on Diet and Regimen*, p. 212.

[†] Adair's Medical Cautions, p. 54, 61, 62, 60, 93.

the admission of a free circulation of air into their bedchambers by various ways, and in different degrees, according to the season of the year, and other circumstances.

This may be gradually effected in the following manner. During the warm close weather of the summer or autumnal months, the chamber door may be left open for a few nights, afterwards a part of the sash may be left open, but the current of air intercepted by the shutter, and as the person becomes more habituated to free air, the shutter also may be left open, and the current of air prevented by dropping a window curtain before it.

In the colder months, a window in an adjoining apartment may be left open, also a door of communication, opening or closing the shutter, according as the wind does or does not blow directly from that quarter. It is proper, however, to observe, that though pure air is necessary to health, yet that great caution is requisite in gradually accustoming ourselves to it. Great and sudden refrigeration by ventilation is dangerous. Opening the windows ought never to be attempted but with great caution. A gentleman, active and hardy, and accustomed to a country life, accidentally slept in a room where his servant had neglected to shut one of the windows; the consequence was, his being seized with a serious illnes, from which he recovered with difficulty. Above all, sitting in a draught of air is dangerous. Though if the whole body is exposed, it will not suffer, yet if only a part receive the impression, it is often attended with very fatal consequences.

Chimney-boards, as very great impediments to a free circulation, ought to be rarely admitted into any apartment, more especially into a bed-room*.

Thick curtains, closely drawn around the bed, are very injurious, because they not only confine the effluvia thrown off from our bodies whilst in bed, but intercept the current of pure air†.

Impure air is peculiarly inimical to the nervous system; it relaxes and enfeebles the general habit; and increases the irritability of the body; whereas there is no means more likely to remove every complaint of that nature, than to pay the greatest possible attention to the quality of the air, both in the day time and at night.

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* Chimney-boards, however, are necessary, where smoke comes down the chimney from other vents.

† In many parts of the country, a still more unwholesome sort of bed is made use of, called a *box-bed*, being made entirely of timber, quite close like a box, and no admittance for air but at the door. Besides the air being thus rendered impure, such beds must be, and are, receptacles for fevers and other contagious disorders.

One of the best means of introducing fresh air into a house, or purifying the air of any particular apartment, is by means of ventilators. These were invented by the celebrated Dr. Hales. This excellent contrivance consists of nothing but of small moveable wheels, made of brass or sheet iron, which are applied to some part of the window-panes, and set in motion by the pressure of the external air.

But instead of using ventilators, Dr. Adair recommends that the casements of all public rooms, and, indeed, of private houses, shall be constructed so that the upper division shall slide down, and that a certain portion of them, according as the room is more or less crowded, be always kept open*. By thus promoting a free and constant circulation of air in every apartment, whether occupied or not, the internal or external air becomes nearly of equal temperature, the foul air, which is generated in close unoccupied chambers, and which adheres to the walls and furniture, will be carried off before it is accumulated, and the usual practice of airing rooms, by opening the windows and warming them with fires, will be less, if at all, necessary.

In proof of these assertions, the following important facts are stated by Dr. Adair. A gentleman who had laboured for many years under a complication of nervous symptoms, for which he had obtained no relief from medicine, at length determined to try the effects of ventilating his chamber in the manner above described, and was benefited thereby beyond expectation. An eminent physician also informed the doctor, that for many years he had been occasionally subject to palpitations of the heart, shortness of breathing, great anxiety and depression of spirits, universal tremor, and other symptoms of the kind usually called nervous: that he had made trial of many medicines of the antispasmodic kind, but had found nothing so effectual as a strict attention to preserve a due temperature of body during the night, at which time the symptoms were most apt to recur. That in order to preserve that tempetature, he found it necessary to use only a moderately thin quilt in the summer, with the addition of a moderately warm blanket in the winter, and no fire in the room, one window of which was kept open all night in the summer, and the whole of the day in cold weather. This regimen produced sound and refreshing sleep, and almost an entire exemption from any troublesome symptoms of a similar kind that frequently came on in the day time*.

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* Care must, however, be taken in ventilating a room, that the cold does not strike directly upon any part of the body, but that by some mechanical contrivances, it be made to strike against the ceiling, so that the coldness may be moderated before it reaches the inhabitants of the room.

These sentiments are strongly enforced by another circumstance communicated to me. A gentleman oppressed by nervous disorders, which all the power of medicine could not remove, resolved to try the effect of a long journey *on foot*, for the benefit both of air and exercise, and before the end of his journey his complaints were totally removed. Exercise certainly contributed to the cure, but pure air, I am persuaded, was the principal source of the restoration of his health.

Where an attention to health is particularly necessary, beds, instead of being made up as soon as people rise out of them, ought to be turned down, and exposed to the fresh air from open windows through the day. This would expel any noxious vapour, and could not fail to promote the health of those who use them. Many who have splendid houses, chuse to sleep in small apartments: this conduct is very imprudent. A bed-chamber ought always to be well aired, as it is generally occupied in the night only, when all doors and windows are shut. If a fire be kept in it, the danger from a small room becomes still greater. Numbers have been stifled when asleep by a fire in a small apartment, which is always hurtful.

Those who are obliged, on account of business, to spend the day in close towns, ought, if possible, to sleep in the country. Breathing free air in the night time, will in some measure make up for the want of it through the day. This practice would have a greater effect in preserving the health of citizens, than is commonly imagined*.

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* Adair's Medical Cautions, p. 62. In Dr. Faust's Catechism of Health, p. 44, it is proposed to make two holes, one through the outer wall of the house, that will open near the floor of it, the other near the ceiling, through the opposite inner wall or partition; the external atmosphere will enter at the hole near the floor, and dissipate the foul air through the aperture above. If placed under the grate, it would most effectually prevent that source of impure air and want of comfort, a smoking chimney.

Ladies and other tender people pass a great deal of their time in rooms extremely well fitted up, so as to admit scarcely any outward air, except by opening of the doors and windows; the air of the room is thus tainted with animal steam and the effluvia of candles. Q. May not some of their nervous symptoms proceed from this cause?

If persons much confined to their rooms, were particularly careful to live always in fresh air, instead of being unhealthy, weak, and labouring under colds and hoarseness, they would enjoy better health, and more comfort, and would probably prolong their existence†.

People ought not to sleep in rooms which have been inhabited the whole day, and the windows of bed-chambers should always be kept open in the day time: nor ought they to sit through the day in the same room in which they have slept, as the bed-clothes, particularly feather-beds, very slowly part with the exhalations they have imbibed during the night, nor is any morning venilation sufficient to purify the air of the room.

As linen readily imbibes the perspirable matter of the skin, foul clothes should never be suffered to remain any time in the bed-room and sitting-room‡.

Sleeping in close or warm rooms, and perhaps on the most heating of all substances, feather-beds, is extremely unwholesome§. The temperature of a sitting-room should not exceed 60 of Fahrenheit's thermometer, but that of a bed-room may be about 50, as the medium of temperature of our climate is between 50 and 55.

It is highly desirable to sleep in an upper floor. Those who have any regard for their health, at least in cities, ought not to inhabit the ground floor‖. A high apartment is also recommended by Tissot to literary and sedentary people¶.

In many cases, the air, impregnated with saline and sulphureous particles, which have never been purged by winds or motion, at last contracts a dampish mustiness, which will be found in rooms in moist houses, that have not been aired, either by fires or opening the windows. The bed-clothes and other furniture of such rooms, abound with putrid air, and are not only unpleasant but dangerous.

Besides these particular rules, it is hardly necessary to observe, that to go into new houses, unless they are thoroughly dry, or into new painted rooms, must be extremely injurious, and by inattention to these things many have perished.

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* Buchan's Domestic Medicine, p. 72.

† Faust's Catechism of Health, p. 45.

‡ Willich's Lectures on Diet and Regimen, p. 213.

§ Ibid. p. 215.

‖ Hufeland, vol. ii. p. 24.

¶ Essays on Diseases incident to Literary and Sedentary Persons.

On the whole, the modern refinements in the construction of houses, for the purpose of excluding the external air; the thick covering which we spread upon the floors of our chambers; and the heating them by close stoves, cannot be approved of, and, instead of being attended with any advantage, is extremely injurious. In vain do the delicate accumulate defences against the vicissitudes of external temperature. Those who never tread but on carpets, and take every precaution to prevent the breath of heaven from blowing on them, are more liable to be disordered by the impression of cold, than the laborious peasant, or the hardy seaman, daily exposed to the rage of storms and tempests*.

In fact, as Dr. Beddoes has well observed, we have made ourselves too tender for the climate in which we live, and instead of enjoying the advantages of the external atmosphere, we are obliged to lead, for a great part of the year, a dusky chamber life†. By following a different system, the Dutch are in general entirely exempted from those colds, so universally prevalent in this country, in almost every season of the year. The majority of the houses in Holland, even at the present day, are the reverse of those usually constructed in this country. The rooms are large and lofty; the windows of an immense size; many of the rooms have no chimney; and where there are any, whole generations have passed without a fire having been once kindled. Their fires are likewise, both from economy and choice, made as small as possible. By this peculiar construction of their houses, joined to warm clothing, they escape many of those disorders to which we are subjected in this country.

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* Buchan on Sea-bathing, p. 22.

† Manual of Heath, p. 32. Dr. Beddoes, though partial to the system of airing houses at the proper seasons of the year, yet strongly objects to the adoption of that plan in cold, and particularly in damp weather, and he has endeavoured to explain, how an important branch of domestic duty may be performed by the house-maid, in the following couplets:

Leave not your sashes gaping high,
When there are foul fogs in the sky,
Just lift them till the dust is laid,
Then fast again let each be made.
While frosty suns shine bright and clear,
To keep them up you need not fear.
In spring and summer, fresh and fair,
Your rooms should drink "*their fill of air.*"

CHAP. III.

OF TEMPORARY, OR PERMANENT CHANGES OF RESIDENCE.

FROM various causes, man is frequently led to change his place of residence. A desire of acquiring knowledge: —a restless spirit of curiosity inherent in his nature,—and commercial pursuits, are sometimes the inducements; at other times it arises from a lust of conquest, or from the difficulty, as population increases, of obtaining subsistence. This spirit of change is, on the whole, beneficial; for the intercourse of nations has been the means of effecting great improvements in human society. The discoveries made in one country, are thus imported into another, where they are often improved upon; and the knowledge or experience of one individual, thus often contributes to the comfort and happiness of millions. Indeed, those men, in general, who, in ancient times, were the most renowned for wisdom, as Lycurgus, Solon, Thales, and others, were travellers, and laid a foundation for the better government of their own country, by studying the institutions of others. The same system was adopted by those appointed to lay the basis of Roman law, the principles of which are still recognised in the jurisprudence of most of the nations of Europe*. But it is not the travels of philosophers in quest of knowledge, or of legislators who study foreign institutions; it is a change of residence, in so far as it is connected with health, and the best means of effecting it with safety, which are the proper objects of the present discussion. With that view, it is proposed briefly to treat, 1. Of travelling by land; 2. Of travelling by sea; 3. Of the advantages and disadvantages of each mode of travelling; 4. Of a temporary change of residence at home for the sake of health; 5. Of travelling abroad for health; and, 6. Of a change of residence, with a view to a permanent settlement.

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* Barclay's Universal Traveller, 1 vol. folio, printed in 1735. Introduction, p 1.

Sect. I. *Of Travelling by Land.*

This may be considered under two heads: travelling, 1. In the British Isles; and, 2. On the Continent.

1. *Rules for Travelling in the British Isles.*

There is no country where persons can travel with so much accommodation and convenience, or, taking prudent precautions, *with so much safety*, as in England. The expence is, doubtless, great; but even that does not prevent a taste for travelling. The total sum laid out for post-horses in Great Britain is above a million *per annum*, of which nearly one-third goes to the public.

In England, one is tempted, by the excellence of the horses, to drive on, and, by the goodness of the inns, to stop frequently. Nothing, however, can be more absurd, and, in some cases, more injurious to health, than the rapidity with which journeys are commonly made; as if the fate of the empire depended on a certain traveller arriving, in a certain number of hours, at a given place; and when he arrives there, he has perhaps nothing to do, and probably wishes himself again upon the road.

The following rules, if duly observed, will promote the safety and comfort of the traveller in these kingdoms.

1. Where persons travel for pleasure, or when they are not compelled by business to travel fast, sixty miles in winter, and seventy in summer, is distance enough to go.

2. In good weather, it is right to go one stage before breakfast, which gives the traveller an excellent appetite for that meal; but when the weather is cold or moist, it is better to take breakfast before you set out. Three, four, or five stages, according to their length, may be taken after breakfast. Stop at a good inn about six o'clock to dinner, and remain there all night. In travelling, indeed, for pleasure merely, you ought to keep nearly the same hours for your meals that you do at home. That system greatly promotes the advantage of a journey.

3. Tea taken two or three hours before bed time, is a refreshing meal, and does not prevent sleep.—Suppers should, if possible, be avoided.

4. The wine at inns is in general bad. Some people take with them Madeira or Sherry, which are not injured by travelling, having no sediment.

tries, the mode of living the best calculated for their climate, a traveller, whilst he attends to what agrees or disagrees with his own constitution, should conform as much as circumstances will admit of, to the customs of the inhabitants, in regard to diet, dress, exercise and rest*.

2. *Water*.—In many foreign countries, the water is bad. Where this happens, it should be boiled, and drank when cold. If that cannot be done, it should be filtrated through a piece of fine linen, and either some toast, a little vinegar, or some juice of lemon put into it. Very indifferent water, boiled with a little tea, becomes safe; or it may be rendered sweet, by charcoal powder†.

3. *Exercise*.—Violent exercise after dinner is prejudicial, and more so in warm countries than in cold ones. Those, therefore, who travel on horseback, or in any vehicle, whose motion is rather violent, will act prudently if they eat and drink sparingly. After a long journey on foot, it is unwholesome to take a plentiful meal, or to sit near a great fire.

4. *Carriages*.—Travellers in carriages are very liable to have their legs swelled. In order to prevent their being thus incommoded, they ought to wear shoes rather than boots, to untie their garters, to alight occasionally, and to walk as often as opportunity permits it, which will favour the circulation. The glasses of the carriages also should not be kept up, as the air would soon be affected, so as to be injurious to respiration. A frequent change of posture is of use.

5. *Bathing*.—Cleanliness requires people to bathe oftener when they are travelling than when they are at home; yet they must be careful never to bathe when their blood is agitated, or the stomach full, or the day very hot. The cool morning and evening hours are the proper times for taking this salubrious recreation. Where bathing cannot be practised, it is advisable frequently to wash the body with cold water.

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* The *siesta*, or afternoon's nap, agrees with many travellers in warm countries, but if they are unaccustomed to the practice, a quarter or half an hour is sufficient, and the sleep should be taken with much precaution, in an arm-chair, and every thing removed that can prevent the circulation of the blood. It is better, however, to avoid it, if the residence is only temporary; when it is permanent, the practice becomes necessary.

† Travellers should carry with them some charcoal powder, in a small bottle, well corked. Mix a table spoonful of this powder in a pint of water, stir it well, and suffer it to stand for a few minutes. If it is then run slowly through filtering paper into a glass, it will become quite transparent, and fit for drinking. This plan was suggested by Mr. Lowez of Petersburgh.

6. *Sleeping.*—Damp beds are very often found in inns but little visited, and in rooms where fires are seldom made. Too great precautions cannot be taken against the mischiefs thence arising. It is better to lie down upon clean dry straw, than upon a damp mattrass or feather-bed. Travellers should, if possible, carry with them a light coverlet of silk, one or two pair of sheets, and one or two dressed hart skins, about six feet six inches in length, and three feet six inches in breadth. One of these skins should be put upon the mattrass or feather-bed, to prevent any disagreeable contact, or nauseous exhalations. Sleeping with the windows open, in hot climates, is extremely unwholesome. Those who travel on foot should never sleep under the shadow of a tree, or near a field of hemp.

7. *Fruit.*—Fresh fruits, and even the ripest grapes, relax the stomach in hot climates, and an immoderate meal on them would infallibly produce the most dangerous consequences, *if bread were omitted to be taken with them.* Thirst, however, is more effectually quenched by eating fresh fruit, and a morsel of bread, than by drinking water.

8. *Marshy Countries.*—In marshy districts, the air is remarkably unhealthy. In such situations, it is necessary to look out for dry houses to reside in, and to sleep in the upper stories. Proper exercise should be taken, avoiding both the heat of the sun, and evening damps. A just quantity of vinous liquors, and victuals yielding good nourishment, is necessary in such cases.

9. *Hot Climates.*—Travellers in hot climates should abstain from meat as much as possible, particularly at night, otherwise they are liable to putrid fevers, which are seldom easily removed. Sweet or boiled wines, as they check the powers of digestion, and tend excessively to inflame the blood, ought to be used in the most sparing manner. Those who have perspired copiously from the heat of the sun, should shelter themselves as much as possible during the falling of the dew; and if they cannot avoid the evening damps, should by no means sit down, for continual exercise is the only means of preventing the fatal consequences which so often result from cold and dew.

10. *Clothing.*—Travellers, who walk much, or take violent exercise, should wear a flannel shirt next their skin. If their clothes have been thoroughly wet, they should endeavour to get dry beds, and clean shirts, and should rub their skins with dry flannel before they go to bed. If they can-

not get dry clothes, they should keep their bodies in constant motion till their clothes have become dry upon them.

11. *Infection.*—A traveller should never visit an hospital before he has breakfasted; for a body void of food is apt to contract contagious disorders. Before visiting the sick, it may be advisable to eat a little bread dipt in vinegar, or to take a glass of wine, with a little sugar, and the juice of half a lemon. The mouth and nostrils should likewise be washed with camphorated vinegar, and during the time of being in an hospital, the spittle should never be swallowed.

12. *Miscellaneous Articles.*—Travellers should not neglect to carry with them a bottle of vinegar *de quatre voleurs*, some French brandy, arquebusade, or Peruvian balsam, laudanum, James's powders, and a small bottle of Hoffman's drops*.

Attention to these directions, given by so experienced a traveller as Count Bertchold, will be found of considerable advantage to the traveller.

In regard to Dr. Duplanil's rules, the following are the most important: 1. A traveller ought to provide himself with clothing calculated for the climate in which he proposes to reside. 2. He will require some medicines, though probably not so numerous as those of which the Doctor has given a list, amounting to thirty-six in number. 3. He ought to avoid any liquors, as tea or coffee very hot, as this will make him feel more the cold afterwards: a glass of water, of the temperature of the air, is the best thing he can take. 4. A rapid journey, by night or day, ought to be avoided, as highly prejudicial to the health. 5. On a journey, a person should continue as much as possible the habits to which he has been accustomed. 6. Nothing is more useful in a journey than to keep up a gaiety of spirit. 7. At an inn, the greatest precautions are necessary, in regard to food, sleeping, &c.

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* The following is the receipt for making these celebrated drops: R. Alcoholis et ætheris sulphuricæ, partes æquales. Six drops on a bit of sugar, are a remedy for faintness. They are likewise accounted the best antidote against sea-sickness. This may sometimes be avoided, by sleeping in the middle of the cabin, instead of the small close cabin beds.

SECT. II. *Of Travelling by Sea.*

This either regards the crew of the ship, or the passen- rs. In regard to the first, the Rules laid down by the lebrated Captain Cook for sea voyages, are so judicious, at they can seldom fail to preserve the health of the crew, here they are properly attended to. As to the second, the rections given by Doctor William Wright of Edinburgh, ho is so well acquainted with subjects of that nature, ust be in the highest degree satisfactory to those who are terested in such inquiries.

Captain Cook's system may be reduced to the following les.

1. *The Crew to be at Three Watches*[*].

This method is already practised in many ships of the vy; but such is the predilection for old forms, that this mane custom is far from being universally adopted. That ue proportion of sleep adds to the health and vigour of body, will readily be granted; on the other hand, no ng contributes more to the production of disease, than little sleep, and that interrupted. At three watches, men have time to shift and dry themselves, if wet; at , the time allotted for rest being so short, they are mpted to rush into their beds in the wet condition in ich they often come from the deck; and are exposed to the dangers which arise from going to sleep in wet hes. When there is no pressing occasion, a seaman ought be refreshed with as much uninterrupted sleep as a com n day labourer[†].

The crew of a ship of war are either at watch and watch, at three hes, or at four watches. At watch and watch, the working seamen are ded into two bodies; one off the deck, and the other upon the deck. y are relieved every four hours, until four o'clock in the afternoon, when e are two watches of two hours each. According to this plan, they will e alternately, one day eight hours sleep, and the other day four. When hree watches, they have, for two days, eight hours sleep complete, but y third day they are only allowed four hours sleep at once; and after atch of four hours, called the middle watch, they have four hours more. r watches are practised in harbours merely.

[†] It is true, that some truly meritorious officers keep their people at two tches, and preserve them in a perfect state of health, but they are most id observers of every other part of this plan.

2. *To have Dry Clothes to shift themselves after getting Wet.*

What has been observed on the former article, will also apply to this; suffice it to say, that Captain Cook paid the strictest attention to this head, by directing some of his officers to see that every man, on going wet from his watch, should immediately put on dry clothes; and the same method observed on their going to bed*.

3. *To keep their Persons, Hammocks, Bedding and Clothes, clean and dry.*

That cleanliness conduces to health will not be denied. This humane commander made his men pass in review before him, one day in every week, and saw that they had changed their linen, and were as neat and clean as circumstances would admit. He had also every day the hammocks carried on the booms, or some other airy part of the ship, unlashed, and the bedding thoroughly shaken and aired; well knowing, that, from the perspiration and breath of so many men below, every thing, even in the space of twenty-four hours, is apt to contract an offensive moisture. When the weather prevented the hammocks being carried on deck, they were constantly taken down, to make room for the fires, the sweeping, and other cleaning operations. It may be proper to observe, that as the beds and blankets are ready receptacles for infection, too much pains cannot be taken in well airing and purifying them. When possible, fresh water should be allowed to the men who wash their clothes, as soap will not mix with sea-water, and linen washed in brine never thoroughly dries. Water from steam might be employed for the purposes of washing.

4. *To keep the Ship clean between Decks.*

Little need be observed on this head, as his method of washing and scrubbing is universally practised, in every ship in the service.

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* The late Lord Mulgrave, in his voyage towards the North Pole, on his men getting wet, used to give each a pint of porter, but they were first obliged to pass before him in dry clothes.

5. *To have frequent Fires between Decks, and at the bottom of the Well.*

On this head Captain Cook laid *the greatest stress*, as an object without which every other effort would have availed nothing; and in this particular, he took special care that his orders should be scrupulously carried into execution. His method was, to have iron pots, with dry wood, which he burned between decks, in a well, and other parts of the ship, during which time, some of the crew were employed in rubbing with canvas or oakum, every part that had the least damp. As moisture is acknowledged to be the great source of the diseases of seamen, by removing that cause, the effect must cease. The advantages of fire are no where more manifest, than in sweetening the well, where the whole leakage, whether of the ship itself, or of the casks of spoiled meat or corrupted water, runs into. Yet this place, often so fatal to many, is now rendered safe and sweet, by means of an iron pot filled with fire, and let down to burn in it. The washing the ship between decks, however proper it may be in fine weather, ought *never* to be practised, but when there is sufficient time given for the fires to render every part perfectly dry, before the men are permitted to return to their births*. There may be some crevices or parts of the ship, where the heat from the stoves cannot readily absorb the moisture. In that case, logger heads, heated red hot, and laid on sheets of tin or iron, will speedily effect the purpose. It is unnecessary to mention every part of the ship that requires fires, such as the manger, orlop, cockpit, &c. as it will readily occur to the discerning officer, that where the least circulating air is, the more necessary it is for fires to extract the foul and stagnant vapour.

6. *To avoid a Draught of Air.*

Under this head, it may be observed, that permitting the men to sit in the draught of air between the ports, when open on both sides of the ship, must ever be attended with danger: and although this liberty is not allowed in many ships, yet its prohibition is far from being universal.

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* When the great cabin, wardroom, or officers' cabins are washed, they are never occupied till dry. Ought not the same care to be taken of the seamen's habitation?

7. *Proper attention to be paid to the Ship Coppers.* 8. *The Fat boiled out of the Salt Beef and Pork, never to be given to the People.* 9. *The Men to be allowed plenty of Fresh Water at the Ship's return to Port; the Water remaining on board to be started, and Fresh Water from the shore to be taken in its room.*

Little appears necessary to be observed regarding these particulars, for in every ship proper attention is now paid to keep the coppers clean and free from verdigrise; and the people are not now permitted to use the fat boiled out of the beef and pork. With respect to having fresh water from shore, in room of what has been at sea, where time will permit, effectual steps are generally taken to secure that essential advantage.

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I thought it right, in this work, to preserve a short account of the great system which does so much credit to the memory of Cook. In consequence of his having rigidly adhered to it, this celebrated navigator performed a voyage of upwards of *three years*, in every climate of the globe, with the loss, by disease, of only one man, who had evidently symptoms of consumption before he left England. In testimony of the high idea they entertained of this happy discovery, the Royal Society, on the 30th November, 1776, decreed their prize medal to Captain Cook: and its President, (Sir John Pringle), on that occasion, justly remarked, "That, if Rome decreed the *civic crown* to him who saved the life of a single citizen, what wreaths are not due to that man, who, having himself saved many, has also pointed out, and recorded the means, by which Great Britain may, in future, preserve numbers of her intrepid sons, who, braving every danger, have so liberally contributed to the fame, to the opulence, and to the maritime empire of their country?"

Dr. Wright's Directions to Officers going to the West Indies, during their Passage.

The following valuable hints, though originally intended by Dr. Wright merely for the use of officers going to the West Indies, are, in general, equally applicable to other descriptions of persons; and indeed, to all those going by sea from a cold to a hot climate.

1. Take your passage in a packet, a frigate of war, or

in an armed ship with convoy, and let your birth or cabin be in a free and well ventilated part of the ship. Transports are often crowded with soldiers, and encumbered with women and children; and unless the most strict and rigorous observance of cleanliness is attended to, in the persons as individuals, and in the births of the men between decks, the *ship* or *jail fever* will soon break out, first amongst the troops, then among the seamen, and, lastly, among the officers themselves.

2. If you have not before made a voyage any where, it is probable you would get *sea-sick*, which, while it lasts, is extremely distressing. I advise you at all times to sit in good air, and to be much upon deck throughout the day, and frequently to bathe the face in a bason of cold salt water. After each fit of vomiting, take a small bason of tea, water-gruel, or broth. Take sparingly of solid animal food, and abstain from spirits or fermented liquors for some days.

3. Here it is proper to take notice, that salt beef and pork are drained of all their nutritive juices. Living on such food, exhausts the power and action of the stomach, and no proper supply of chyle enters the circulation. This, with lying in confined parts of the ship, never fails to produce sea scurvy, with all its direful consequences.

4. Costiveness must be prevented by attention to diet. Eat moderately of flesh meat, but with it plenty of vegetables. There is not a better, nor a more wholesome mess at sea, than pease soup, when seasoned with onions or celery seed; exercise upon deck is conducive to health in general; it strengthens the stomach and bowels; it promotes digestion, and enables every organ to perform its functions. Some mild laxative medicine may be taken now and then, as the aloetic pill of the shops.

5. While at sea, make a hearty breakfast of tea or coffee, with plenty of biscuit and butter. The same articles may be used after dinner, or between five and six o'clock in the afternoon. Take nothing between breakfast and dinner, nor be prevailed on to partake of the *meridian bowl.* This palls the appetite, weakens the stomach, and occasions a confusion in the head.

6. Take care that the live stock be regularly fed and kept clean, otherwise they will soon be in a diseased state, and die; or, if killed, not fit to be brought to the table.

7. Let your dinner, when on board of ship, or on shore, consist of a due proportion of animal food and vegetables;

no rich sauces, or highly seasoned food. Eating in moderation is necessary.

8. During dinner, take a glass of water, or good brisk small beer. The absurd practice of drinking several glasses of wine, while eating, should be abolished. Three glasses of wine after dinner may be taken, or a draught of porter or ale; but a mixture of liquors never fails to disorder the stomach and head.

9. For supper, take a slice of cold meat, and a draught of porter. Go to bed soon, and rise early. Wash your face and hands in cold salt water*.

A person who observes temperance, sleeps sound, rises refreshed, and is fit for any exertions of body and mind throughout the day. But the intemperate and luxurious are soon fatigued and debilitated; they are unfit for labour or exertion; they become peevish; a burthen to themselves, and a source of vexation to all around them.

SECT. III. *Of the relative Advantages or Disadvantages of Travelling by Sea or Land.*

IT has often been disputed, whether travelling by sea or land ought to be preferred. If one travels in a carriage by land, the seat is confined, the posture uneasy, and the company may be disagreeable. But in the cabin of a vessel, if properly constructed, every thing is neat, and often elegant; the apartment may be well warmed; all the accommodations necessary may be met with, as a good bed, a good table, the power of reading books, of attending to ordinary studies, or applying one's self to music, or to amusing games; and the society on board a vessel being more numerous, if possessed of good dispositions, they become more united, and desirous of contributing to each other's comfort and happiness. All these advantages, however, it is contended, are dearly purchased by the dangers of the sea, and the unpleasant consequences of a protracted navigation*.

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* It may be proper to add two receipts, one for preserving cream for several weeks or months, and the other for making egg tea, both of which may be useful in sea-voyages.

Mode of Preserving Cream for several Weeks or Months, particularly calculated for Sea Voyages.—Take 12 ounces of white sugar, and dissolve it in some ounces of water over a moderate fire. After the sugar is dissolved, boil it for about two minutes in an earthen vessel; after which, add, immediately, 12 ounces of fresh cream, and mix the whole uniformly over the fire; then suffer it to cool, pour it into a quart bottle, and cork carefully. Keep it in a cool place, and it will continue fit for use for several weeks, or even months.

Mode of making Egg Tea.—It is well known how difficult it is to procure cream, or even milk, at sea, for making tea; but eggs may be preserved in a fresh state, by being buttered, or put up in salt, or preserved in lime water, and they form a most excellent substitute. The mode of using an egg, is this. Put in the whole egg, yolk and all, *in a raw state*, into a bowl, and unite the whole thoroughly, by working it together with a table spoon, then pour in the tea gradually from a tea-pot, constantly stirring the mixture, so as to make it one uniform and homogeneous mass. It is hardly possible to distinguish this mixture, when properly prepared, from tea and rich cream. It is a very nourishing substance also, and may, with that view, be recommended to invalids on shore. An egg thus prepared, may likewise answer with coffee, instead of cream.

In regard to sea-voyages for the sake of health, it is certain, that sailing is of considerable use in various disorders, as in consumption, asthma, rheumatism, and glandular obstructions, and in some respects it possesses advantages to which no other species of exercise can lay claim. The following may, in particular, be enumerated: 1. A person is carried very quickly, and blown about by the winds, which are often adverse, by means of which, the pressure and action of the air is much increased. 2. This exercise *is constant*, for the ship is perpetually in motion, and the body is continually under its power, whereas, other kinds of exercise, are only taken at intervals. 3. The volutory and tossing motion of the ship, is a great addition to the exercise, as thereby one set or other of the muscles, throughout the whole body, is regularly and alternately kept in action, in order to preserve the equilibrium. 4. One is constantly breathing an air peculiarly salutary, which is rendered more salubrious, as the air suffers a constant undulatory motion, corresponding to the motion of the sea. 5. The sickness and vomiting, which often accompany sailing, is in the highest degree wholesome. It cleanses the first passages from bad humours, which, if retained, might vitiate the chyle, and render the blood impure and disordered. It also restores the tone of the stomach, and of its appendages; and is a sure remedy in many diseases, which have their seat in, and depend on, the distempered state of the alimentary tube. Its beneficial effects on the stomach are soon perceived, by the appetite which it in general gives. 6. Sailing unites the advantages *of walking*, or the gentle and constant action of the muscles, with which that exercise is accompanied; and *of riding*, or the continued succussion which it occasions; and furnishes the same advantage, of being carried about with considerable quickness through the air. 7. Though accompanied with all these advantages, yet it is not a severe exercise, nor is it attended with lassitude or loss of spirits, as other exercises often are; which cannot indeed, be undertaken by those who are weak and wasted, without great precautions; whereas, sailing, though a violent species of exercise, yet is nevertheless safe; and except the sickness which it at first occasions, it is easily sustained. There is hardly any stage of a disease, in which the use of it ought to be prohibited, if the frame of the body or mind is not too much broken, or some part corrupted; even in this last case it is sometimes highly proper[*].

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* Medicine du Voyageur, tom. i. p. 139. To guard against one of the principal dangers attending a sea-voyage, a cork jacket has been recommended, as a means of safety in the event of shipwreck.

Sailing, however, is not without its disadvantages. It is certainly of use to the weak, provided the motion of the vessel be steady and even, and the sea not rough, nor the wind too high; but to be tossed about in a stormy sea, affects the strongest constitution, if not accustomed to it, and occasions giddiness, vomiting, intolerable anxiety, fainting, and terror[†]; and, on these accounts, cannot, in many cases, be recommended.

SECT. IV. *Of a Temporary Change of Residence at Home, for the sake of Health.*

IN the present mode of living, and state of society in this country, by which such multitudes become the inhabitants of great towns, there is no practice more salubrious, or which tends more to renovate the constitution, than a temporary retirement to the country, to such as can afford the expence; and as many have not country houses to reside in, *watering-places*, as they are called, must be resorted to, where many likewise fly, as a cure for the disorders with which they are afflicted[‡].

An ingenious author has called these places, "receptacles "for the dying, corresponding to charnel-houses, where "desperate cases can be sent away from notice, and by "which the credit of a baffled practitioner may, in some

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[*] Gilchrist on the Use of Sea Voyages in Medicine, p. 13, 17.

[†] See the Best Method of Preserving Health, p. 143.

[‡] These doctrines are sanctioned by Hippocrates, who states, "that in long diseases, change of country is of service."—*Clifton's Hippocrates on Prognostics*, p. 389.

" measure be saved*;" and it must be admitted, that such a change, more especially in the case of consumptions, is seldom attended with success. But still, as the change of air, the effects of new scenery, the benefits arising from the exercise attending the journey, and the hopes of relief, are sometimes attended with the best consequences, the system of going to such places ought not to be entirely given up; though it would certainly have a much better effect, if it commenced in an early stage of the disease. As travelling, however, to a remote place, must be extremely uncomfortable in the cold seasons of the year, if the journey cannot be commenced in favourable weather, it would be better to remain at home, (fitting up the apartments properly against the inconveniences of the winter season), than to be driven about in bad weather, and sent from one comfortless lodging to another, which the healthy themselves often find to be prejudicial.

Dr. Beddoes, in his work already alluded to, has given the following rules regarding watering-places.

The waters of Bath, he observes, are undoubtedly not inert. They are useful to enfeebled stomachs, and in other weaknesses of the digestive organs, they have proved of service. Let the rich, therefore, resort to Bath to spend their superfluous money, and to find amusement, if they can, in this lounger's paradise.

Persons *in confirmed consumption*, however, ought not to be sent from home, for the sake of any air or water we have. The strong desire of a dying person, changes the state of the question altogether. But the whim is often transient, and they may almost always be persuaded to desist from an undertaking, of which the evil is certain, and the chance of benefit hopeless.

It is certainly advisable, in hot weather, to escape from a great city, into any, not unhealthy, part of the country, likely on the whole, to be most convenient; and children should always be in the country if possible.

Bathing, and artificial waters, can, in general, be had as well at home as abroad.

Travelling is by no means to be confounded with change of air. The agitation of the body changes its functions; and the effect of fine scenery is another consideration totally distinct.

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* Manual of Health, p. 32, 327, &c. &c.

The places of resort most agreeable, will be most salutary to some valetudinarians; but for others, those most disagreeable are best on that very account, as their stay at them will be shortened.

Sect. V. *Of Travelling abroad for Health.*

Besides the places at home, it has long been the custom in England, to send consumptive patients to warmer climates, such as the South of France, Spain, Portugal*, or Italy, for the sake of enjoying a drier and purer air. The utility of this practice is much doubted. It appears that an atmosphere, *charged with a certain degree of moisture*, is more friendly to the lungs, and to the body in general, than very dry air.

In hot sandy climates, (for example in Egypt), all the means which art can suggest, are employed, to moderate the heat, and to supply the atmosphere *with the necessary moisture*. They make wells in the middle of their houses; they receive the cool air of grottoes by means of tubes; they live in cellars in the hot weather; keep their windows open during the night, and close those carefully which are exposed to the sun during the day; they sprinkle their apartments with fresh water, or spread leaves or flowers over them; thus the air becomes charged with the moisture that evaporates, by which its elasticity is diminished, and its parching dryness is rendered supportable.

Dr. Pugh has demonstrated, by arguments founded on experience, that the climate of Naples or of Nice, is very inimical to consumptive people. He instances a great number of English who died in a short time in these towns, a large proportion of which would probably have escaped, if they had remained in England, or chosen some parts of the

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* In a recent publication, "Information respecting Climate, interesting to a numerous class of Invalids in Great Britain," (printed an. 1815), the climate of Portugal is objected to, on account of its constant cold nights, and great difference of temperature in its fine and bad weather; for though even in winter, there is sometimes a fortnight of fine steady weather, so warm, that the windows may be open from twelve to five o'clock; yet during the succeeding three weeks, the rains may be incessant, without any fires, as in England, to counteract their mischievous effects. The inhabitants both of Portugal, and of the Cape of Good Hope, keep themselves warm by clothing, and say, "We do not adopt the English custom of fires, because if we did, we would, like them, catch cold" On the whole this author contends, that nothing short of St. Helena, the West indies, or the Brazils, can be worth going to sea for, in order to prevent, or to cure consumption.

South of France. He then proceeds to enumerate certain cantons of France, which he prefers to any part of Italy. He mentions, for the winter season, the environs of Avignon, of Nismes, and of Perzenas; principally because these districts are at a suitable distance from the sea, the influence of which he thinks is prejudicial in *cold weather*.

In summer he prefers Bareges or Bagneres, (both situated in a hilly country), even to the mountains of Cevennes, which should be left about November, in order to return to the proposed winter residence.

An ingenious author, from whose work these observations are extracted is, on the whole, of opinion, that it is proper to seek for, and to prepare suitable situations for invalids, *in our own islands*. He maintains, that the mild and sheltered vales of Devonshire, and part of Cornwall, offer situations greatly to be preferred to those of any foreign country; and that whilst such invalids as are obliged to leave their families for the recovery of their health, may easily correspond with, or be visited by, their dearest connexions, they may enjoy, on the south-western shores of England, and in other parts of the British islands, all the salutary advantages of foreign climes, without the inconveniences and the dangers of a distant voyage*.

SECT. VI. *On a change of Residence, with a view to a Permanent Settlement.*

It is well known, that owing to commercial and other motives, numbers of individuals are led to emigrate from this country to warmer regions, in particular to the East or West Indies, many of whom suffer from the voyage, or fall victims to the change, as they rarely know the precautions necessary to preserve their health, in a new and untried situation. To persons advanced in life, such a change is not unfavourable, but to those who are young and healthy, who are full of blood, and who live upon animal food, and fermented liquors, it is frequently fatal, from ignorance how to conduct themselves†.

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* Dr. Regnault's observations on Pulmonary Consumption, and an Essay on the Lichen Islandicus, considered as an aliment, and as a medicine in that disorder, printed anno 1804.

† Valangin's Treatise on Diet, &c. p. 26. This author recommends, that they should never think of removing from a cold to a hot climate without previous evacuation.

In order to obtain information regarding the means of preserving the health of Europeans in our East Indian settlements, the author applied to some friends, long resident in the East, (in particular to Col. John Macdonald), by whom the following rules have been recommended to the attention of their countrymen.

Rules for the East Indies.

1. Attend to the usages of the best informed natives, adapting them to your own habits, as much as European and Oriental customs can assimilate.

2. On landing in India, take some medicine best adapted to the general habit.

3. Rise early, and retire early; taking morning exercise in a carriage, or on horseback, but carefully avoid getting the feet wetted with the morning dew.

4. Every second morning, bathe the whole body with cold water, and follow the native plan, of throwing the water on the head, by means of a small bucket; some, however, prefer the tepid bath of from 92° to 97° of Fahrenheit, particularly if little exercise has been taken.

5. Never bathe after having been out, and after having brought on perspiration, either by walking, or any other exercise. In such a case, be content with rubbing the body well with clean towels, and having the feet and sinuosities only of the body washed with cold water; using the wetted corner of a towel for the latter purpose.

6. Breakfast on tea, or coffee, eating rice, or fish, or meat prepared with spices. Curries, or hot grills, will be far from injurious at this meal. It has been justly observed, that the Torrid Zone produces a greater quantity of stimulating herbs than other quarters; as if Nature intended them for vivifying the digesting powers, subject to weakened or reduced action, arising from excess of atmospheric warmth.

7. While in motion, have no dread of perspiration, even to excess. Those who unfortunately do not perspire freely, generally soon fall victims to a climate, whose heat almost always produces copious perspiration, even under a state of rest.

8. When under a profuse perspiration, avoid sitting down in cool or cold situations, and, more especially, if exposed to a draught or current of air. Shifting in India four or five times a-day is usual. When strong perspiration

has been excited, shift; taking care to rub the body well with clean, and rather coarse towels.

9. Avoid eating and drinking in the course of the forenoon, or between breakfast and dinner. If water, cooled by means of salt petre, be requisite to allay thirst, let such not be drank when perspiring freely. A settlement remarkable for mortality, became healthy, when the inhabitants abstained totally, from drinking sangaree and punch in the forenoon; as these pernicious beverages excited an excess of bile, productive of intermittent fevers and agues, too frequently followed by fatal malignant disorders.

10. At dinner eat and drink freely, and *never* finish this principal meal without curry,—a dish *never* absent from the table of the natives. Avoid dishes made up with rich sauces of a greasy description, and not relieved by the intermixture of spices. Use the fine vegetables of the country freely. Fruit at first must be taken in very moderate quantities, as an early excess in this respect, always lays the foundation of slight disorders of the stomach and intestines, and leads, *soon*, to a serious affection of the general system*.

11. The intense heat of the Occidental and Oriental climates, exhausts the strength and animal spirits, hence wine in moderation may be taken, to stimulate the relaxed, and stagnant powers of the system, thus reduced by labour, or perspiration. The kind of wine is important. Madeira, or old sherry, ought to be preferred. A mixture of wines is improper. Malt liquor is prejudicial, unless where much exercise is taken.

12. An hour's sleep, after dinner, is a vivifying and refreshing indulgence, required by the nature of the climate. If high perspiration has taken place during this rest, it may be necessary to shift, previously to taking an airing in a carriage, or by walking out in the cool of the evening.

13. It is best to abstain from eating at supper, any thing beyond a little fruit, and a very small portion of digestible food, as chickens, or cold tongue, &c. &c.

14. Care must be taken not to sleep with open windows,

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* It is for want of proper attention to this point, that ships arriving in India, in a short time, lose a large proportion of their crews: when a pineapple can be purchased for a few pence, and other fine tropical fruits can be had for almost nothing, the poor sailor, long deprived of esculents, and induced by such tempting productions, thinks he cannot consume too much at so cheap a rate; little aware, that this indulgence certainly leads to his destruction.

exposed to the pernicious influence of the land-winds. The quantity of covering must be light, as perspiration, brought on by much clothing, is not salubrious, but quite the reverse.

15. On such mornings as the bath is not used, the feet and *angles of the body*, should be well washed, using a towel-corner wetted in water, to rub with; also, the rest of the body should be washed, previous to an early morning ride.

16. Captain of ships, their officers and passengers, too frequently omit to provide themselves with *light clothes* calculated for the climate. They land *heavily covered*, and frequently, malignant fevers are soon brought on, by keeping the system thus oppressed with excess of heat, and perspiration lodged and soured in clothes, used again and again for want of proper changes. Many of the common sailors and soldiers, fall victims to this cause. If a cheap light kind of dress were prepared for them, numberless lives would thus be saved.

17. On getting unavoidably wet, shift *instantly*, taking care to dry the body well, rubbing it over immediately afterwards, with any sort of spirits, but giving a preference to brandy. Many destructive fevers arise from inattention to this simple preventive.

18. The head, when bared, must never be exposed to a *coup de soleil*.

19. On being sensible of any unpleasant feel in the mouth, or on experiencing any thing like a shivering lassitude; or any pains in the arms or limbs, a cathartic medicine must be taken, (rhubarb or calomel), with the advice of some medical gentleman. Half the deaths in hot climates, arise from early inattention to predisposing causes of mortality.

20. Huxham's Tincture of Bark, for bracing the relaxed system, after such a tendency to disorder, is an excellent medicine.

21. After violent exercise*, such as *tennis* or cricket, avoid lying down on the grass, more especially towards evening.

22. Redoubled attention must be bestowed in keeping ships, in hot climates, singularly clean. The hammocks and all the bedding, should be well aired and fumigated. The decks below, should be occasionally mopped with warm

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* A bag truss, or suspension bandage, is of use, where violent exercise is taken.

vinegar. Similar precautions are applicable to troops and barracks.

23. Avoid exposure to meridian heat as much as possible; at the same time, when it is absolutely necessary, by due attention and care, no detriment will result from it.

24. Avoid fermented liquors, excepting at meals; and also every mental agitation, calculated to irritate the system.

In regard to the West Indies, the following are the directions given by that intelligent physician, (Dr. William Wright of Edinburgh), who, from his great experience of the climate, and the diseases in the West Indies, was eminently qualified to furnish many valuable hints to those who emigrated to that, or to a similar climate.

Directions by Dr. William Wright, to Officers and others who commence a Residence in the West Indies.

1. On landing*, keep out of the heat of the sun; or, when out of doors, use an umbrella. For some time, walk at leisure, and take no violent exercise in the heat of the day†. *When a man is fatigued, sickness is at hand.* In other words, he is liable to a remitting fever, to receive contagion from human subjects, or from miasmata, arising from salt marshy grounds near the sea.

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* After fasting long at sea, people should eat sparingly when they land, and ought to return to full meals by slow degrees, otherwise they will suffer for it. Light food, as white fish or poultry, and mulled Port, are the articles best calculated for the stomach in that tender state.

† Great colds succeeding great heats, are productive of diseases; even cold nights after hot days. Many of the acute diseases of Europeans in hot countries, are occasioned by their exposing themselves incautiously to the serene or nightly dew. *Arbuthnot on Air.*—In regard to the yellow fever, so fatal in our West Indian settlements, I regret to find, from the most respectable authority, that no general mode of treatment can be laid down respecting it, for it differs so materially at different times, and in different places; and varies so essentially in its form, in its daily progress, even at the same time and place. There are periods, when wine may be given with great success, if the patient shall eagerly call for it. The hot bath is at times highly beneficial, at other times the cold bath has been used with the utmost benefit. In the very early stages of it, bleeding to excess has completely stopped the progress of the disease. In a word, the experience, judgment, and constant attendance of an able medical practitioner, affords the best chance of saving the patient, connected with all the circumstances attending the particular case, and the correctness of the opinion he may entertain of his general habits and constitution.

[illegible] garrisons in the West Indies, are on the [illegible] sea, they are generally unhealthy. If [illegible] take a house on a rising ground, remote [illegible] well clothed with timber trees and suc-

[illegible] a healthy exercise, especially before break- [illegible] bathing is salutary, but remember, *never to* [illegible] *perspire, or when cold*; and you ought not [illegible] one minute in the water at a time.

[illegible] time you are caught in a shower, keep in [illegible] you get to your own house, or that of a friend. [illegible] a complete shift of clothes to put on; after strip- [illegible] your skin be well wiped with a dry towel: but by [illegible] rub the body with rum, as by it the pores are con- [illegible] and a fever may be the consequence. The best [illegible] in this case, is a warm bason of tea, coffee, chocolate, or broth, according to the time of the day. As you value your life, abstain from warm toddy, punch, or negus, unless this last is very weak.

5. There are a number of excellent fruits in all the islands; take care they are fully ripe; and eat little of them at a time, in the morning or afternoon.

6. Strangers are much tormented with musquitoes, but after some time pay no attention to them. Be sure, at night, to draw down the musquito net close all around, and brush it well inside with a large towel, to kill such musquitoes as may still be there.

7. Chigres are a species of flea that burrow into the feet and toes; at first they occasion an itching, and then a little red lump, which becomes painful. A negro is the best hand to pick them out; and a little snuff may be put into the cavity.

8. In a well-regulated regimental mess, no one sits long after dinner; an officer's duty will not admit of it; he is either on guard, or at the evening parade. He need never want amusement or exercise; in his quarters, he may have books, musical instruments, or employ himself in drawing; and if he has a turn for natural history, so much the better, he will find ample subjects for his purpose; in all the islands the scenery is new and beautiful, often magnificent and grand.

It may be proper to add, that both in the East, and in the West Indies, the frequent use of the warm bath, at a temperature of from 90° to 96° of Fahrenheit, ascertained by a thermometer, cannot be too strongly recommended*.

Besides emigrating from a cold to a hot country, a change of residence frequently takes place, from a hot to a cold climate, and sometimes from a dry to a damp one, or the reverse.

To change from a hot to a cold climate is generally prejudicial, unless where persons have been accustomed, from their infancy, to bear cold. The frame cannot stand so great an alteration, and all the differences, in point of food, clothing, &c. that must take place. Unaccustomed to take precautions against cold, and not believing them necessary, those who are subject to such an alteration, must suffer from perpetual neglect and imprudence, and frequently sink under the inclemency of the seasons, and the hardships to which they are subjected. The want of heat is particularly felt, insomuch, that an Italian nobleman, who found himself miserable in this country, from the cold he experienced, declared his full conviction, "That the moon of Italy, had more warmth in it than the sun of England."

To go from a dry to a damp climate, is unfavourable to health. Hence several of those emigrants who were compelled to exchange the dry climate of France, for the humid atmosphere of Great Britain, complained, that they suffered much from the change; and, in particular, that their eyes were much affected by it. Among the emigrant priests, however, who lived with great regularity, the mortality was very inconsiderable.

To go, however, from a cold and damp, to a dry and warm climate, more especially at an advanced period of life, may tend to promote health and longevity. It is said, that old people, who go even from Portugal to the Brazils, get a new lease of life. The attentions which are necessary in a bad climate, render a good one, where they are not so essential, delightful to the indolence of old age; and old people may, in such climates, be almost constantly in the hich is highly favourable to the preservation of

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* Dr. Currie, of Liverpool, after Lord Bacon, proposes the revival of the warm bath, from 90° to 95° for Europeans *in the West Indies*, particularly after fatigue in the scorching sun.—*Code of Health*, 2d edition, vol. ii. p. 49.

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hange, according to Doctor Short, is, when persons who are
wild, and mountainous places, whose fibres and vessels are
ense, whose juices are strong and grumous, and who are ad-
r and melancholy, take up their residence in a low, wet, and
Those persons, on the other hand, who are born in low,
places, and whose fibres and vessels are weak and lax, thrive
dry, wild, rocky, and mountainous districts. See Short's
n Bills of Mortality, p. 60.

CHAP. IV.

OF THE CUSTOMS AND HABITS WHICH INFLUENCE HEALTH.

BY *customs* and *habits*, are meant the usages, which individuals adopt in regard to their mode of living, diet, clothing, exercise, sleep, and other particulars connected with the regulation of their conduct. Though there is a distinction betwen the two, yet they cannot well be separated in this discussion. *Customs* are usages which require more or less the exercise of the will; whereas a *habit* is the result of a custom so long continued, that it is persevered in without reflexion. We may *accustom* ourselves, for instance, to rise early, till we at last become *habituated* to the practice[*]. A habit, it has been observed, is rarely formed in youth, though certain customs then begin which lead to it: in middle age habits gain ground, and in old age they govern with almost despotic authority. In that period of life, generally speaking, we rise, eat, take exercise, and go to rest, at a certain hour; nay, a particular seat, table, bed, &c. it has been observed, come to be essential to our comfort, and a habit contracted in regard to any of these particulars, cannot be controlled without uneasiness.

It is not proposed, in a practical work like the present, to enter into a philosophic discussion of the influence of customs and of habits on our minds or feelings. It is sufficient to observe, whatever be the cause, that we are so much influenced by them, that mankind are well described as the children of habit, which in fact becomes a second nature. In regard to the preservation of health more especially, it cannot be doubted, that it greatly depends on attention to a number of customs and habits, or *minute particulars*, which, taken singly, appear trifling and unimportant, although, when combined, and habitually followed, they are of the utmost importance.

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[*] As Shakespear has happily expressed it,

"How use doth breed a habit in a man."

Two Gentlemen of Verona, Act V. Scene 2.

In discussing this subject, we shall consider; 1. Those customs and habits which the author has personally found most beneficial; 2. Those which have been recommended to him by respectable authority; and, 3. To consider those usages, the practice of which are either doubtful, or supposed to be injurious.

SECT. I. *Customs and Habits found to be beneficial by the Author.*

1. THE rule of going early to bed, and rising early, is certainly preferable to the opposite system; but can, by custom, be, to a certain degree, dispensed with, provided *regularity* be attended to in both these respects*. This concession, however, does not sanction what are called *fashionable hours*, or sitting up all night, and sleeping during a large proportion of the day, which is evidently preposterous, and must be ruinous to the health, and injurious to the interests of those who have any business to carry on.

2. The young and the middle aged, if in health, ought not to spend above eight hours in bed†, or from eleven to seven in summer, and from twelve to eight in winter. If the remaining sixteen, however, *are properly employed*, the eight devoted to repose need not to be regretted. If fewer hours suffice, it is better to sit up at night, than to rise in the morning by candle light, which often has an unpleasant and severe effect upon the eyes.

3. After rising, it is an excellent custom, to wash and dress immediately, or, at any rate, before breakfast, so as to be ready to go out when business or exercise requires it. If dressing is deferred till after breakfast, a great deal more time is wasted, or lounged away, than is compatible either with healthful exercise, or with the rules by which a man of business ought to conduct himself.

4. The morning toilet, when properly gone about, is of great importance to health. The chief object to be attended to is, cleanliness of person, even to minutiæ: a daily change of linen is highly desirable; a frequent one is necessary.

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* The late Earl of Panmure, who lived to be eighty-two, acted on this maxim. He retired to rest between eleven and twelve, and rose in his latter years at eight, earlier in his younger years.—*Code of Health*, 2d edition, vol. ii. App. p. 69.

† The great Lord Mansfield recommended eight hours; and it was a favourite maxim with him, "*to cultivate sleep.*"

5. A careful attention to the eyes, where they are either weak, or liable to be diseased, cannot be too rigidly enforced. For that purpose, it is useful to dip the corner of a towel, doubled down, in hot water, by the application of which, for about a dozen of times, any slight inflammation in the eyes may be removed. If that is not sufficient, the eyes, *with the lids closed*, ought to be steamed, by boiling water, in a jug with a handle, so that the steam may, at pleasure, be applied with increased or diminished force. Even violent inflammations are lessened or cured by this application. After the hot, use cold water, in a manner which it is very difficult to describe; but either a large handkerchief, or a small towel, should be plaited up, so as to be in breadth from three to five inches, and then put into a bason of cold water. *With your eyes shut*, and stooping over the bason, you are then to give several smart strokes, (from 30 to 40 or 50), with the wet towel or handkerchief, to the centre of your face. You must have a towel ready spread out near you, on a chair or table, with which you must remove all the moisture about the eyes, before you open them; and if they are tender, hold the towel on your spread hand, between you and the light, before they are opened. Others look, with the eyes open, into a bason of cold water, for the space of a minute, with a view of bracing the eyes; but I have found the practice immediately above described the most effectual.

6. If you wear a wig, as all persons after sixty ought to do, (for reasons to be afterwards explained, see Sect. 2), you should wash your head every morning with cold water*; and it is an excellent practice, to dip a strong flesh-brush into the water for that purpose, with which you ought both to wash, and to rub your head at the same time.

7. Every morning the feet should either be washed in cold or tepid water, or cleaned with a wet towel, and great attention paid to the cleaning and paring of the nails.

8. In shaving, use cold water, for hot relaxes the throat, and occasions sore throats and colds. The razor may be dipt in hot water, which is believed by many to improve the edge.

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* An old clergyman in Scotland, for above forty-five years, has been accustomed to go early in the morning to a small rivulet below his garden, and to bathe his head in cold water, in winter as well as in summer, breaking the ice if necessary. *Code of Health*, 2d edition, vol. ii. Appendix, p. 62.—The application of a wet towel to the forehead, is also of use to remove some kinds of headachs, arising from intoxication, or the flow of blood to the head.

9. Attention to the teeth is of the utmost importance, with a view of keeping them always clean, but not endeavouring to give them a brilliant white, which destroys the enamel. The brushes are more for the advantage of the gums, than of the teeth, and might properly be called *gum-brushes*. The best are those which rub up and down, for the others do not prevent the growth of tartar between the teeth. The common tooth-powders are extremely dangerous, destroying the enamel of the teeth, which, it is supposed, is the only substance in the body that is not constantly renewed. Once lost, it is never regained. Powdered charcoal is recommended by some, as likely to prevent injury from any putrid substances adhering to the teeth or gums; but others prefer oatmeal, as softer and less acrid. When the teeth are neglected, the gums become first diseased, the breath becomes tainted and noxious, the teeth then rapidly decay, and the food, not being properly masticated, must occasion various complaints.

10. The mouth and tongue should be carefully cleaned every night and morning, and the mouth gargled with *cold* water, a practice that should never be omitted by those who are subject to sore-throats.

11. The use of flesh-brushes, which I consider to be the best of all frictions [*], is an effectual means, both of preserving health, and of warding off the infirmities of old age. By eye-brushes, (a late invention, made of soft materials), that important part of the body might be longer preserved in a perfect state. By brushing the ears, and behind them, deafness may be warded off, and in various instances has been cured. By the same means, sore-throats may generally be prevented. Any weakness in the arms may be obviated by brushing them night and morning; and by using friction of the same sort, to the stomach and thighs, *a degree of vigour is given to the body*, of which persons are not at all aware, otherwise the practice would be more generally adopted. The feet also should be rubbed with the flesh-brush after they are cleaned [†].

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[*] Rough woollen gloves may likewise be used; or horse-hair ones for the sciatica, and other complaints. The Asiatics prefer quilted silk gloves. Flesh-brushes are now made with long handles, so that a person can brush his own back. The best are made of *whisk*, or a kind of Venetian grass, to be had at 350, Oxford-street.

[†] The following communication, transmitted to the Author by a distinguished literary character, in March 1809, proves the advantages of friction.

"Sir John Sinclair having recommended the use of the flesh-brush to a gentleman, when at the age of sixty-seven, he desired to know, when was

12. It is an excellent custom to be frequently in motion. Chairs should be made use of as seldom as possible, except at meals, or when a person is reading or writing. When walking within doors, you have as much circulation of the blood, or exercise, as if without. The only difference is, that the air is less pure*.

13. Lolling on couches or *ottomans*, (a modern fashion), is calculated for the lazy and luxurious Turk, but ought to be reprobated by the active and the industrious, unless when real fatigue renders it necessary.

14. Those who read or write much, should adopt the practice of sitting at a sloping desk, to prevent stooping, and the bending of the head and breast, so pernicious to the health of sedentary people.

15. Reading in bed is a most pernicious custom, and if by candle-light, cannot be too strongly reprobated. People ought never to lie in bed, except for sleep, or when compelled by illness. Reading, when walking about, is likewise a bad practice, and is not to be recommended even in a carriage, unless it goes slow, or the roads are smooth.

16. Tallow candles are much more favourable to the eyes

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the best time for applying it; the answer was, whenever most convenient. Being in London, and consequently denied the exercise he usually took in the country, and being accustomed to retire early to bed, he was subject to waking in the night. He took advantage of these opportunities, to strip off his shirt and flannel waistcoat, to jump out of bed, and to brush, (holding a brush in each hand), till he was tired, and then went to bed again. This plan answered, and his sleep became unbroken, till his usual hour of rising. —He had, for many years, applied cold water, at all seasons, as soon as he was out of bed, but now changed it for the flesh-brush, using it during fifteen or twenty minutes: this continued for about three months; and it is remarkable, that a cutaneous eruption, somewhat resembling a nettle springe, which often appeared upon parts of the body, entirely ceased, nor did it re-appear till after the application of cold water, always followed by the brush, but in a degree seldomer, and less than formerly. It is more than a year since he began the use of the brush, and his health in general has, upon the whole, been better *than for thirty years before*. He had been much subject to rheumatic pains, but they have been brushed away with great success, once only excepted in the hip, and then, by applying salt and water, strong enough to swim an egg, rubbing it in with the hand before a fire, on going to bed, two of these applications carried it off. He does not know to what to attribute his good health, under God, *unless to the flesh-brush*, as no other variation in his habits of living took place. It appears to him, that it answers the purpose of moderate and healthy exercise, assists in freeing the skin from all impurities, and keeps the pores clear and open. The brush is applied to the back by means of a leather strap across its centre, thus rendering three brushes unnecessary. The harder the brushes are, the better for the operation."

* Those who dictate to their clerks, or are consulted, ought to execute their business either walking or standing, which will relieve both body and mind.—*Cheyne's Essay on Health*, p. 203.

than wax ones. Reading much at night with wax candles, though it gives the steadiest light, has ruined many a brilliant eye, the air being impregnated with dry and caustic, instead of oily substances. Argand's lamps are still more pernicious than even wax tapers; and it is cruelty in the extreme, to compel those, whose living depends upon their eyes, to use those lamps in writing, without the greatest precautions, such as a shade or moon.

17. If you have a slight feverish disorder, or a heat in the hands, which prevents sleeping, nothing is so easy as to get rid of such a complaint. Get a bason or flaggon of very cold water, and after baring your arms to the elbow, gradually and alternately immerse each hand and arm into the water, for twenty or thirty times, and then rub them dry. It must be done *slowly*, for the heat is only extracted from that part of the skin that comes in contact with the surface of the water. The evaporation also from the skin, during the time that it is exposed to the atmosphere, must have a good effect in cooling it. Slight fevers, at their commencement, may thus be removed.

18. For the recovery of strength, after a severe illness, the following practice is particularly recommended. Get a crust of good bread, dip it, piece by piece, into a glass of very old rich sweet wine, as Canary, or Tent, or Madeira, to be taken about twelve at noon. No cordial can be more restorative.

19. Wearing flannel next the skin, is, on the whole, a good practice, more especially after fifty, and during the cold and moist seasons of the year; but it is essential, with a view of deriving advantage from it in the day time, to put it off at night, after you are in bed. It is contrary to common sense, as Dr. Beddoes has well observed, for one who is master of a comfortable bed, to wear flannel near the skin at night*.

20. I have found, by the experience of thirty years, that the Spanish practice of wearing a waistcoat of chamois leather, is highly useful to prevent chilliness, and to ward off rheumatism. No cold can penetrate it, and it is light to carry. Were it not for its aptitude to get wet, and the difficulty of making it dry, it would be an excellent article of dress for our soldiers and sailors.

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* Manual of Health, p. 220. Some wear muslin next their skin, under the flannel, for the sake of cleanliness; others, instead of a flannel shirt or waistcoat, wear a loose piece over the breast or stomach, or even to go round the back, which can easily be laid aside at night, and put on in the morning.

21. It is of the utmost consequence to preserve an erect posture. All the organs of the body are then placed in their natural situation, and circulation is greatly promoted. The aged ought particularly to attend to this maxim.

22. But, above all, it is of essential importance to health, to preserve an equanimity of temper, and not to sink under the disappointments of life, to which all, but particularly the old, are frequently exposed. Nothing ought to disturb the mind of an individual, who is conscious of having done all the good in his power, and who has fulfilled all the duties of his station. Whereas, if he is subdued by misfortune, or indulges despondency, health cannot long be retained.

A variety of other rules connected with the subjects of air, diet, exercise, digestion*, sleep, &c. will be found in the preceding chapters of this work. By the observation of those above detailed, the author has derived so much benefit, that he earnestly recommends them to the attention of others, who may adopt such as are best calculated for their respective situations, and modes of living†.

Sect. II. *Rules and Customs recommended from respectable Authority.*

A number of rules for the preservation of health have been given by several authors, sometimes dispersed in large publications, and at other times abridged as maxims or aphorisms. There are very few of them, however, calculated for active life, or fit for those who live in society, *as it is now constituted.* I shall select those which seem to me best entitled to the attention of the reader, and shall then give an abstract of the system, by the observance of which, the celebrated Plutarch reached an advanced age with unimpaired mental and personal faculties.

1. Those who are apt to be fat and unwieldy, ought to abstain from liquids as much as possible; for great drinkers

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* It is a most useful habit, and indeed is essential to the preservation of health, if possible to get rid of the redundancies of former meals, either before, or immediately after breakfast.

† The author feels less hesitation in recommending these rules; for by attending to them, after having been reduced to a languid state, he has now enjoyed an almost uninterrupted state of health for above eighteen years; and he can go through as much personal and mental exertion, as the generality of much younger men, and that without observing any strict regimen, or secluding himself from society.

are more generally corpulent than great eaters. Even water is nourishing, either from its own qualities, or as promoting digestion, as appears from an interesting experiment[*].

2. Wearing a wig is an excellent practice for the old, the tender, and the studious. It tends to prevent headachs, and a nervous weakness in the eyes, more especially when the head is shaved daily. Washing the head with warm water and soap, and scraping the skin with a razor, clears off all scurf, and promotes perspiration. The head should afterwards be washed well in cold water, mingled with a few drops of spirit of lavender or Hungary water. This prevents the head from catching cold, and greatly assists in preventing deafness[†].

3. Two things ought to be particularly avoided, 1. Giving up the body entirely to idleness; and, 2. Eating again before the last meal is digested[‡].

4. It is of the highest importance to pay particular attention to one's temperament, and constitutional weaknesses. If a person be sanguine or choleric, it gives a tendency to inflammation; or, if phlegmatic, he is likely to be affected with chronic or nervous disorders. In regard to constitutional weaknesses, every man, in a physical sense, has his weak side; and diseases generally fix themselves in those parts which are by nature weakened. In some persons, diseases attack the lungs; in others, the stomach, and so on[§]. Wherever such weaknesses exist, every exertion should be made to strengthen the parts subject to them.

5. The preservation of the eyes depends much upon a moderate use of light, and it is a fact confirmed by experience, that too much light is extremely hurtful. Many persons have lost their sight by living in rooms with white walls, or by having their windows so situated as to reflect strongly the light of the sun. The light admitted into rooms, may be so proportioned by shutters, venetian

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[*] Two pigs of the same litter were fed with an equal quantity of milk, but to one of them, the milk was mixed with an equal quantity of water. After a month's feeding, they were both killed, and that which had the water, was found to be much larger and fatter than the other. See Cheyne's Essay on Health and Longevity, p. 204. This is an important experiment to the feeder of stock, as well as to the physician. By an obstinate forbearance from drink, some dropsies have been cured; and in the case of the miller of Billericay, in Essex, corpulency was got rid of.

[†] Cheyne's Essay on Health, p. 198.

[‡] Best and Easiest Method of Preserving Health, p. 201,

[§] Hufeland, vol. ii. p. 284.

blinds, or curtains, that it may be perfectly sufficient for use, but neither stronger nor weaker than is necessary*. It may be proper to add, that being near-sighted, partly proceeds from the injudicious custom of confining children during the first years of their lives, almost constantly within doors. They are thus rendered incapable of forming a focus properly for *distant* objects†.

6. An unseasonable change of clothing is often pernicious. A gentleman was suddenly seized with violent, and almost intolerable spasms in his legs, which deprived him at once of all motion, and seemed to affect him universally. Various conjectures were formed about the cause, and various remedies were given, to no purpose. At length it occurred, that the spasms might proceed from wearing silk stockings, to which he had not been accustomed; and the weather at that time was rather cold. On this conjecture, he took off the silk, and put on a pair of worsted stockings; in consequence of which he recovered‡.

7. It is an excellent rule, in regard to diet, that every man should eat and drink *a proper quantity of what best agrees with his constitution*, but never should eat or drink so immoderately, as to overload the stomach, or take such refreshments as are difficult to digest.

8. Nothing can be either more ridiculous, or more pernicious, than the custom of eating and drinking things *very hot*. It spoils the teeth, brings on the tooth-ach, disorders the head and eyes, ruins the stomach, and is the source of infinite mischief§.

9. A frequent change of posture appears to be favourable to health. One of Lord Bacon's rules was, "Never to keep the body in the same posture above half an hour at a time||."

10. Any unpleasant piece of intelligence ought always to be communicated when the stomach is empty. The tumultuous agitation of the brain, renders the stomach powerless and paralytic, prevents the natural action of the

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* Letter from Chevalier Edelcrantz. Code of Health, vol. ii. Appendix, p. 19.

† Sailors, from looking at remote objects, become long-sighted, and with difficulty can accommodate the eye to objects nearly situated. Students, watch-makers, and others, who are in the habit of viewing things close to them, on the other hand, become near-sighted; and those who live much in small chambers are subject to the same defect. A greater number of women than of men, in proportion, are near-sighted, from their being less abroad.

‡ Thoughts on the Relaxation of Human Bodies, p. 57.

§ Harper's Economy of Health, p. 39.

|| Lord Bacon's Works, vol. i. p. 429.

We should beware of such food as may tempt us to eat when we are not hungry, and of such liquors as may entice us to drink when we are not thirsty. Such, it is true, may be used when they become necessary to our nourishment or health; but we must take great care never to let those delicacies prevail with us to overcharge our stomach. It is absurd for individuals to injure their health, merely for the sake of boasting with what high-priced rarities they were feasted; whereas, it would be much more to their honour, if they could say, they had such a command of themselves, as to abstain from them.

Those who have a taste for true pleasure should, for the sake of that pleasure, live temperately; because without temperance there can be no health, and without health, we can relish no enjoyment. What avail the greatest delicacies to a sick stomach? Is not a good appetite the most exquisite sauce?

Although great fatigue, heat and cold, have been known to bring on fevers, yet those external causes, rarely bring distempers upon such as are temperate, and free from any redundancy of humours. It is this redundancy that throws the body into stubborn diseases, just as offensive mud, agitated by external causes, taints the air, and every thing that comes near it.

Though voluptuousness, or luxury carried to an extreme, is considered as a destroyer of true pleasure, yet an over-scrupulous and rigid abstinence, exposes the body to many dangers, lowers the spirits, and disqualifies us for labour or pleasure. A medium should be kept between those two extremes, and, like skilful mariners, we should neither slacken our sails too much in fair weather, nor spread them too wide in a storm.

Whilst we should observe moderation in diet, exercise and pleasure, so likewise our sleep should neither be too long nor too short: Even our dreams are thus rendered natural and easy; for when we find them absurd and frightful, we have reason to apprehend a fulness, or some bad disposition of the humours of our body. In the same manner, if any sudden causeless fear, or grief, or fretfulness, seizes us, it is more than probable that some malignant vapour, from our distempered bodies, mingles with our spirits, and disorders them.

It would be of great moment towards the preservation of our health, if, when we visit our friends under any illness, should inquire, without an air of curiosity, or affectation of physical learning, whether fatigue, abstinence, or any surfeit, had occasioned their illness, that so we ourselves might learn the necessity of temperance from the experience of others, and take care to avoid those excesses which were the cause of their misfortunes.

It is surprising to think, what benefit the sedentary in general, and men of letters in particular, would receive, *from reading aloud every day,* and to that exercise, therefore, they should make themselves familiar. What going in an easy chariot is, compared to the violent exercise of riding on horseback, the same is reading aloud, compared with dialogue or conversation. The voice moves gently upon the thoughts of another, and glides smoothly along, without that vehemence which generally attends disputations. When violent, such disputations have frequently been the cause of bursting a blood-vessel. This exercise of reading aloud, however, should not be used immediately after repletion or fatigue, for such an error has proved fatal to many.

Idleness and sloth have always been looked upon as the great sources of disease; and the man who thinks to procure health by indolence, *is like him, who by continuing always silent, hopes to mend his voice.* Besides, the very aim and end of health, which is action, is destroyed by sloth. What is his health good for, who never makes any exertion for his own advantage, or that of his friends?

Some have recommended walking after supper; others, thinking that motion disturbs digestion, believe rest to be preferable. The rational views of both may be obtained, by giving rest indeed to our bodies, but by entertaining our minds with cheerful conversation, which will neither fatigue the spirits through close attention, nor occasion inconveniences of any kind; such as those agreeable and amusing discussions which take place at the entertainments of men of letters.

Temperance in eating and drinking, and in all the other gratifications of our senses, is likewise highly conducive to health. It were better to accustom ourselves from our youth to such temperance, as not to require much flesh meat; for it is heavy, and not always very easy to digest. Nature herself seems to have meant that meat should be eaten but moderately, by permitting the earth to yield abundance of wholesome vegetables for nourishment and sustenance, some of which may be eaten as Nature has produced them, whilst others may be dressed and made palatable in different ways.

The most noble of all artificial liquors is wine. It is not only a useful drink, and a most palatable medicine, but of all delicacies the most grateful to the stomach. If we should happen, however, to be scorched by heat, fatigued with business, exhausted with intense thinking, or seized with any feverish disorder, a glass of warm water only, or mixed with but little wine, will refresh us more than wine alone, which having a natural activity and heat, is apt to exasperate our disorder.

It is also necessary to be so well acquainted with our own constitution, as to know perfectly what agrees or disagrees with us. It is reported of the Emperor Tiberius, that he said it was shameful for any man, past threescore, to reach his hand to a physician to feel his pulse. This was a strong expression; but still it is proper, that a man at sixty, should have some knowledge of his own pulse, because there is such a variety in pulses*, and should be acquainted with his own temper of body, in regard to heat or cold; but, above all, should have ascertained by experience, what agrees with him, and what does not; a knowledge of which is easily acquired by a little attention and care.

SECT. III. *Of doubtful or injurious Customs.*

THERE are three practices, which, notwithstanding all the objections urged against them, continue too frequent, more especially among the lower orders of society. These are, taking, 1. Tobacco; 2. Opium; and, 3. Spirits.

1. *Tobacco.*

Tobacco was originally brought into fashion in England by Sir Walter Raleigh. The dry plant having been first imported in any quantity from the island of Tobago, it hence obtained the name of *Tobacco*. In botany, it is classified with plants of a most noxious quality, as foxglove, henbane, &c. Its effects, when first taken, are in the highest degree nauseous and disgusting; and it is justly contended, that the excessive use of tobacco, in whatever manner it may be exhibited, heats the blood, hurts digestion, wastes the finer part of the fluids, and relaxes the nerves†. It is proper, however, to distinguish the four modes in which it is used: 1. Smoking; 2. Taking it as snuff; 3. Chewing; and, 4. Plugging the nostrils; that we may discriminate the objections to each.

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* A physician was much alarmed at finding the pulse of a patient very irregular, and sometimes stopping altogether; but his anxiety was relieved when he was informed, that it was a circumstance not unusual in the patient's family, and that it had always been the case with him.

† Harper's Economy of Health, p. 39.

1. *Smoking.*—The first mode of using tobacco was to smoke it in a pipe. When introduced in the reign of James the First of England, that monarch was so much disgusted with the new fashion, that he wrote a book on purpose to expose its unhealthiness and offensiveness. But Lord Bacon informs us, that it had come, even in his time, immoderately into use, and that it affected men with a secret kind of delight, insomuch that they, who had once inured themselves to it, could hardly leave it off. He admits, however, that it hath power to lighten the body, and to shake off weariness[*].

The objections to smoking have been very ably stated by Dr. Waterhouse. The first is, the waste or vitiation of the saliva, which, if lavishly thrown away, removes one of the strongest sources of hunger and digestion. Smoking is likewise particularly injurious to lean, hectic, and hypochondriacal persons; it creates an unnatural thirst; it leads to the use of spirituous liquors; it increases indolence; it confirms the lazy in the habits they have acquired; and, above all, it is pernicious to the young, and lays the foundation of their future misery[†].

These objections are certainly powerful, and ought to be seriously considered by those who have no particular cause for adopting this custom. At the same time, there is reason to believe, that this practice is not injurious to persons who live in cold and moist climates, particularly to seamen, soldiers, and others who are accustomed to hardships.

A list was transmitted to me, of forty persons above eighty years of age, in some of the Western Islands of Scotland. Of these, no less a number than thirty, or three-fourths, are reported to have been addicted to the use of tobacco; and of the remaining ten, it is probable that some of them followed the same practice, though it was not adverted to at the time[‡].

Having procured from Greenwich Hospital, a list of all the old men in that establishment, exceeding eighty years of age, it appears that there are ninety-six in all of that age, of whom there are thirteen above ninety, and one above a hundred, and yet they almost all use tobacco*.

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[*] Lord Bacon on Life and Death. Code of Health, 2d edition, vol. iv. p. 164.

[†] See Cautions to Young Persons concerning Health; a public lecture by Dr. Waterhouse of Cambridge, New England, inserted in the Code of Health, 2d edit. vol. iv. p. 532, &c. These remonstrances of Dr. Waterhouse against *segars*, as detrimental to youth, merit particular attention.

[‡] Code of Health, vol. ii. Appendix, p. 177.

There is likewise a return of the pensioners in Kilmainham Hospital in Ireland, in which there are thirty-one above eighty years of age, all of whom, with the exception of one, were in the habit of using tobacco, and many of them freely†.

I also received an account of the number of persons above eighty, in the workhouses of London, Westminster, and Southwark, and some of the neighbouring parishes, in which there are four hundred and seventy-one above eighty years of age, among whom, a hundred and eighty-one persons use tobacco, and above eighty of them use it freely‡.

It does not appear, therefore, that a temperate use of tobacco, can be considered as an obstacle to longevity. At the same time, an excessive use of it certainly produces many injurious consequences. Frequent and much smoking makes the teeth yellow and black: the clay pipes are apt to canker the teeth to such a degree as to infect the breath, and to produce putrid ulcers in the gums. Smoking, when carried to excess, even impairs the mental faculties§. Those who are addicted to this habit should smoke slowly; frequently drink small draughts of beer, ale, tea, or any other diluent liquor, but neither spirits nor wine; they should never use a pipe that has been in the lips of any other person, as contagious diseases have thus been propagated; and indeed they should always use a clean pipe, or one that is waxed at the extremity; for the oil of tobacco, settling on the sides of the pipe, is a most acrimonious substance, which may be accidentally absorbed, and mixed with the fluids of the body||.

2. *Taking Snuff.*—Powder from the dried leaves, and sometimes even the stem of tobacco, is the basis of all the different sorts of snuff. In some cases snuff may be of use

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* Code of Health, 2d edit. vol. iv. p. 164.

† Ibid. vol. ii. Appendix, p. 186.

‡ Ibid. p. 189.

§ To persons of a middle age, or those of full growth, particularly the corpulent, the phlegmatic, and such as are subject to catarrhal complaints, it may be of service, if used with moderation, especially in damp, cold, or hazy weather, and at sea. But such persons ought never to smoke immediately before or after a meal, as the saliva is of use to assist the concoction of the food, which is not accomplished till about three or four hours after a meal.

|| Willich's Lectures on Diet and Regimen, p. 531.

as a medicine. By the sneezing which it occasions, it very powerfully promotes the mucus discharge from the nostrils, and thence is of service in head-achs, and complaints in the eyes, but that benefit is lost when it becomes familiar; and on account of its narcotic quality, it is not so proper in cases of apoplexy, lethargy, deafness, and other diseases of the head, as the assarum[*]; and any liquid, productive of the same effects, deserves every preference over a powder, which, though at first stimulating, and occasioning a flow of viscid matter, in the end always obstructs the nostrils[†]. The use of snuff is likewise extremely dangerous to the consumptive, to those afflicted with internal ulcers, or who are subject to spitting of blood. The objections to this custom have been summed up in the following terms: It is an uncleanly habit; vitiates the organs of smell; taints the breath[‡], ultimately weakens the faculty of sight, by withdrawing the humours from the eyes; impairs the sense of hearing; renders breathing difficult; depraves the appetite; and, if taken too copiously, gets into and affects the stomach, and, in a high degree, injures the organs of digestion[§].

The only arguments that can be urged in its favour, are, that it is a sociable custom, fills up some vacant time[‖], keeps people awake when they feel inclined to fall asleep at improper hours, furnishes occasionally an agreeable stimulus, and is a cheap luxury for the poor.

3. *Chewing Tobacco.*—This seems to be the most exceptionable mode in which the plant is taken. The celebrated Cullen, in his lectures on the Materia Medica, observes, that a constant chewing of tobacco destroys the appetite, by depriving the constitution of too much saliva. Some do not eject the saliva, but prefer swallowing the nasty mixture.

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[*] Practical Synopsis of the Materia Alimentaria and Materia Medica, vol. i. p 112.

[†] See Willich on Diet and Regimen, p. 533. If this stimulus be too violent, it may bring on so profuse a discharge of matter from the delicate membrane lining the nose, as to relax and corrode it, and to produce a polypus, or a concretion of clotted blood in the nostrils. Many find small snuff injurious,—from its fineness, it gets into the brain or stomach; they are therefore obliged to take the rougher and coarser sorts.

[‡] The women of fashion in France, seldom take snuff on that account, till they are married.

[§] Willich on Diet and Regimen, p. 534. Yet Frederick the Great, who, notwithstanding a life of great personal and mental exertion, lived to the age of 74, took such great quantities of snuff, that he wore a tin pocket to hold it.

[‖] Professed and inveterate snuff-takers, it is calculated, devote several hours in the week, and days in the year, to this indulgence.

This often produces faintness, palpitation of the heart, trembling of the limbs, and, sooner or later, some serious chronical inconvenience[*].

As a proof of the great mischief done by chewing tobacco, it is well known by the attendant physicians at the hospitals of Haslar and Plymouth, that numbers of the sailors and marines who are sent there, have a trick of chewing tobacco, and swallowing the spittle, as an expedient for getting out of the service, in consequence of the complaints which are thereby produced. Indeed, when the practice has been long persevered in, it brings on an incurable atrophy, or emaciation and weakness[†].

4. *Plugging the Nostrils*[‡].—It is a custom with some, to put small rolls, or *plugs* of tobacco up the nostrils, thus protecting from cold, and inflammatory affections, that moist membrane that lines the nostrils, and descends through all the branches of the wind-pipe, as far as the air we breathe penetrates. It would be desirable to ascertain by experiment, how far such a plan is of use, and whether some means of hardening that delicate membrane, against atmospheric influence, could not be devised.

2, *Opium.*

Opium is a milky juice that exudes from the heads of poppies when incisions are made in them, and is then gradually dried in the sun. The use of this celebrated medicine, though not mentioned by Hippocrates, can be clearly traced back to Diagoras, who was nearly his cotemporary; and its importance has ever since been gradually advanced by succeeding physicians of different nations. The Turks, who were forbidden by Mahomet to drink wine, intoxicate themselves with opium; and they carry it to such an extent, as to destroy the energy of the stomach, to undermine the powers of all the other organs of the body, and even the faculties of the mind. The visage and general appearance of the opium-eaters in Turkey, are the most disgusting imaginable; and tired of life, and the dismal prospects before them, they often terminate their own existence[*].

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[*] Dr. Waterhouse's lectures. See Code of Health, vol. iv. p. 568.

[†] Thoughts on the Relaxation of Human Bodies, p. 57.

[‡] Sir Wm. Temple recommends, putting a leaf of tobacco into the nostrils for an hour each morning, with a view of drawing rheums in the eyes and head, through their proper and natural channel. Prince Maurice of Nassau, preserved his eyes by that practice to a great age, after the danger of losing them at thirty years old; and Sir Wm. followed the same plan, with the same success.—*Essay on Health and Long Life.* *Code of Health*, 2d edit. vol. iv. p. 389.

Dr. Rush is of opinion, that opium may be given with great advantage, to abate the pains of the chronic rheumatism, and the uneasiness of the old man's cough, (as it is called); also to remove wakefulness, and to prevent the necessity of rising in the night time. But its uses as a medicine, which are both numerous and important, ought to be regulated by the directions of a medical friend. Opium is certainly the most sovereign remedy in the Materia Medica, for easing pain and procuring sleep, but, like other powerful medicines, becomes highly noxious to the human constitution, and even mortal, when improperly administered[†].

3. *Dram-drinking.*

The subject of spirituous liquors has already been discussed in a former part of this work, (see Part I. Chap. II.) Here it is proposed, merely to allude to an unwholesome custom, taking what is called "a dram," or a glass of spirits undiluted, particularly in the morning. It is impossible to conceive any habit more truly pernicious[‡]. When poured unmixed into an empty stomach, a dram may be well called *liquid fire*[§]. It should never be taken in the intervals between meals, but accompanied by a considerable quantity of bread, or other solid food; and never but occasionally, in moist and cold weather. At sea, in high latitudes, or in an elevated and damp climate, ardent spirits may be of some use under proper regulations.

On the whole, the preservation of health depends much on *our daily habits;* for it is not what we do occasionally, but what we do every day, that can injure us essentially. The customs and habits, therefore, which we adopt, are of infinite importance: they must either do us great good or much harm, by establishing health on the one hand, or fixing disease on the other[‖].

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[*] Dr. Waterhouse's Lectures on Health, Code of Health, vol. iv. p. 553.

[†] See Dr. Thornton's Philosophy of Medicine, vol. iv. p. 103. The Doctor adds, by the indiscriminate use of that preparation of opium, called Godfrey's Cordial, many children are yearly cut off.

[‡] This subject is very ably explained by Dr. Rush, in a paper entitled, "An Inquiry into the Effects of Spirituous Liquors on the Human Body, "and their Influence upon the Happiness of Society," printed in his Medical Inquiries, vol. ii. p. 57. On the other hand, Burke has made an ingenious defence of gin, in his tract on distillation.

[§] It is shocking to think how many dram shops in London are supported by women. The men have certainly their share of blame, but in general they repent sooner, and are obliged to go to work again.

[‖] Cadogan's Dissertation on the Gout, p. 97.

CHAP. V.

OF BATHING.

AMONG the ancients, as Lord Bacon has justly observed, bathing was a daily practice, and as common, more especially among the higher and middle ranks, as eating or sleeping; whereas it is considered by us as a part of physic. Bathing, however, he adds, may be so used, as to become a great help to health, and to the prolongation of life[*].

This extensive subject, which has been discussed in so many volumes, shall be briefly considered, on the present occasion, under the following general heads. 1. The objects and uses of bathing; 2. Of cold; 3. Of warm; 4. Of vapour; 5. Of shower; 6. Of partial; 7. Of air; 8. Of earth or sand; 9. Of public baths; and, 10. Of some modern improvements in bathing; together with some general observations on the effects of bathing at the different periods of life.

SECT. I. *The Objects and the Uses of Bathing.*

THE objects of bathing are, 1. Cleanliness; 2. Removing fatigue; 3. Augmenting physical strength; 4. Preventing diseases; 5. Curing them; 6. Avoiding contagion; 7. Relieving bodily pain; and, 8. Assuaging mental distress.

1. *Cleanliness.*—This is considered to be so essential to health, and contributes so much to the beauty and perfection of the human frame, as to be accounted half a virtue[†]. The inhabitants of this country, however, though so much

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[*] Bacon's Works, vol. iii. p. 150. Also Code of Health, second edition, vol. iv. p. 300. Laurent Joubert, a celebrated French physician, proves, that many illustrious Romans, were in the habit of bathing themselves, particularly in summer, four, five, six, seven, and sometimes eight times a-day. —*Marcand de l'Usages des Bains*, p. 16.—Nor is constant bathing confined to civilized nations. In the island of Otaheite, both sexes bathe frequently, and never eat without washing before and after. The negroes in general, particularly those of Ardrah in the slave coast, wash themselves morning and evening.—*Kames's Hist. of Man*, vol. i. p. 231.

[†] The Spectator, No. 631.

distinguished for the general neatness of their domestic economy, and the accurate cleanliness of their apparel, yet in multitudes of cases, are too apt to neglect bathing the whole body. Those parts of it which are exposed to view, are carefully and regularly washed; but the same attention is not always paid to the parts that are usually clothed. By this neglect, the matter thrown out by perspiration, is permitted to accumulate on the surface of the skin; and the obstruction of that important discharge, gives rise to a variety of cutaneous diseases, which, by simple ablution, with either cold or warm water, might have been prevented[*].

2. *Removing Fatigue.*—Hot baths were originally employed, for the purpose of recruiting a frame exhausted by fatigue. Those who had been engaged in violent exercises, as was the case in some of the favourite amusements of the Greeks, found their exhausted strength renewed, and their depressed spirits elevated, by immersion in the warm bath. Nothing can be more soothing and grateful to the body, after it has been exhausted, than going into a bath of from 90° to 95°, or 96° of Fahrenheit. The farther waste of perspirable matter is thus checked;—the loss of heat, which, in that situation, so readily passes from the body, is prevented;—and the principal sources of lassitude and debility are removed[†]. The Abyssinian traveller (Bruce) remarks, that in the intense heats of that country, a lukewarm bath, afforded him more refreshment and vigour than a cold one.

3. *Augmenting Strength.*—The ancients were likewise of opinion, that warm bathing increased their physical powers; hence baths of that description were consecrated to Hercules[‡]. In modern times, however, cold bathing, when properly applied, is reckoned more strengthening.

4. *Preventing Diseases.*—The skin is one of our most important organs, through the medium of which, the greater part of the impurities of our bodies are discharged. In man, as well as in other animals, a soft and clean skin is the criterion of health; whilst its dryness is one of the first and surest signs of approaching disease. It is not therefore to be wondered at, that improving the state of the skin, either by the warm or the cold bath, should be found

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[*] Buchan on Sea-bathing, p. 195. Since the universal use of linen or cotton next the skin, bathing has become much less necessary with a view to cleanliness.

[†] Ibid. p. 187.

[‡] Marcand de l'Usages des Bains, p. 23.

an effectual mode of preventing numerous complaints[*]. A warm bath is useful not only by opening the pores, but by absorbing a too great, or restoring a deficient internal heat[†]; while a cold bath removes that immoderate sensibility in regard to the air and weather, which is the source of so many disorders.

5. *Curing Diseases.*—Some general remarks shall afterwards be made, on the disorders which may be alleviated, by using the various sorts of baths. But it may be proper here to observe, that bathing requires much caution, in its application as a remedy for disease. It produces beneficial effects in many complaints, yet there is scarcely one of them, in which it may not, if improperly used, be found prejudicial[‡]. One great advantage of bathing, however, certainly is, that if it does not cure disease, it frequently assists the operations of the medicines given, and thus indirectly contributes to the benefit that may be received[§].

6. *Avoiding Contagion.*—Bathing is not only attended with success in several disorders arising from contagion[‖], but there is every reason to believe, that it is the best mode of preventing infection[¶]. Mr. Este states, that he has been more exposed to contagions, perhaps, than most people; but that he has hitherto proved insensible to their baneful influence; and he considers himself principally indebted to the use of baths, for a large portion of the health he at present enjoys[**]. Struve also maintains, that it is a good defence against contagious poisons[††]. The use of the warm bath has long been common among the French inhabitants of the West India islands, and their exemption from some of the diseases which are so fatal to the British in those climates, is probably, in a great measure, to be attributed, to the frequent custom of warm-bathing[‡‡]. Perhaps if so useful a practice were universally adopted in the West Indies and in America, the ravages of the yellow

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[*] Hufeland on the Art of Prolonging Life, vol. ii. p. 233; and Taylor's Remarks on Sea-water, p. 14.

[†] See Code of Health, 2d edit. vol. ii. Appendix, p. 18.

[‡] Wainewright's Mechanical Account of the Non-naturals, p. 151.

[§] Essay on Hot and Cold Bathing, by John King, p. 140.

[‖] See Este's Cursory Remarks on Contagious Disorders, p. 2.

[¶] In an able paper, "On New and Additional Means for the Prevention and Eradication of Contagion," circulated by Doctor Rollo of Woolwich, an. 1805; it is recommended "that individuals not yet affected, should use the warm baths, and adhere to a rigid system of cleanliness.

[**] See Este's Cursory Remarks on Contagious Disorders, p. 23.

[††] Asthenology, p. 361.

[‡‡] Buchan on Sea-bathing, p. 207.

fever might in a great degree be prevented. Beneficial effects might likewise result from its use, in our naval and military services in the East Indies.

7. *Relieving Bodily Pain.*—This advantage from the use of the warm bath, is fortunately experienced in various disorders, as the stone, the colick, &c.; and it has this additional circumstance in its favour, that it may be applied as a means of relief, with perfect safety.

8. *Assuaging Mental Distress.*—Bathing, also, refreshes the mind, invigorates the system, checks irritation, promotes sleep, and spreads over the whole frame a sensation of ease, activity, and pleasantness. Indeed, a person distressed in mind, will derive more refreshment from the use of a warm bath, and may drown his disquietude in it more effectually, than by indulging in copious libations to Bacchus[*]; for,

> "Even from the body's purity,—the mind,
> Receives a secret sympathetic aid." THOMSON.

On the whole, bathing has been found so highly beneficial, and indeed is so necessary in some climates, that its observance, at stated times, has been prescribed by legislators, and founders of peculiar systems of faith, as a religious ceremony, which cannot be too rigorously fulfilled[†].

SECT. II. *Of Cold Bathing.*

THIS branch of the subject may be considered under the following general heads: 1. House; 2. River; and, 3. Sea baths.

1. *House Baths*[‡].—It is unfortunate that few houses have the proper conveniences for bathing; and where these are wanting, a bath often does more harm than good. But though in private houses, baths are not always properly constructed, or kept in good order, yet in several watering places, they are in every respect unexceptionable; and the

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[*] Willich's Lectures on Diet and Regimen, p. 82, 96.

[†] A Treatise on Cold and Warm Bathing, printed at Edinburgh, an. 1807.

[‡] A singular mode of applying cold water in the house, was practised by the late Earl of Panmure, who died in January 1782, aged 82. He was accustomed, till a short while before he died, every morning previous to dressing, to raise himself naked from his warm bed, and instantaneously to wrap himself in a sheet just dipped in cold water. It is well authenticated, that by adopting the same method, a person recovered strength from a long continued state of debility, and relaxation of constitution. *Dr. Molleson's Remarks on Longevity.*—See Code of Health, second edition, vol. ii. Appendix, p. 48.

benefits of cold bathing may be enjoyed to great perfection within doors, by those, who are prevented from bathing without, by tempestuous weather, or to whom the open sea is an object of apprehension[*]. The temperature of the air, and of the water, may be uniformly kept up nearly at the same degree. From the accommodations provided in buildings appropriated to this purpose, no time need be lost in undressing, previous to bathing, or in dressing after it. But a little time may be allowed to elapse with advantage, before going into the open air, till the body has recovered its usual condition, and the glow of heat, indicating the good effects of bathing, begins to diffuse itself over the surface[†].

Besides large baths, sometimes tubs of water are used for domestic purposes[‡]; and these might be greatly improved by the addition of salt, giving to inland districts, some of the advantage of sea-water baths[§]. Struve is of opinion, that in summer, river water ought to be employed in preference to any other; but, if there is none in the neighbourhood, that spring water should be suffered to stand all day exposed to the sun, that it may acquire a more animating quality, by the caloric and oxygen which it thus imbibes. To this may be added, when used by the aged or delicate, a proportionable quantity of boiled water[‖]. In winter, the patient ought to bathe in a warm apartment. A sufficiently large tub should be employed, otherwise, whilst below, a part of the body is completely warm, the upper or uncovered part will be exposed to cold[¶].

Some delicate people have derived advantage, from daily washing the surface of the body with a sponge, previously immersed in sea-water, or salt and water of a proper strength. Dr. Buchan recommends it as a better plan, to rub the skin till it glows, with a coarse towel, wrung out of salt water, and rendered nearly, but not quite dry, by exposure to the rays of the sun[*].

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[*] Buchan on Sea-bathing, p. 94.

[†] Treatise on Cold and Warm Bathing, p. 21.

[‡] In the Roman baths, there were two kinds of bathing tubs: one fixed, and the other moveable. Among the latter, some were contrived on purpose to be suspended in the air; by means of which, to the pleasure of bathing, was added that of being rocked by the motion given the bathing tub.

[§] It is certainly a useful practice, to add a certain quantity of salt to the water in which the patient is to bathe at home. The water and salt should be renewed every second or third day. *Essay on Indigestion*, p. 21.—The proper proportion is, dissolving one pound of common sea salt, in thirty-two English pints of water. A solution is thus made, which answers all the purposes of sea-water.

[‖] Struve's Asthenology, p. 362.

[¶] Ibid.

2. *River Baths.*—River-bathing has its advantages, from the water containing caloric, and its continual motion. It is not, however, to be much recommended to the debilitated, unless in the height of summer. The bath ought to be taken either before dinner, or before an early supper. But the patient, if delicate, should only remain in the river for a few minutes[†].

River baths, and bathing in lakes, or large pieces of water, are so very useful to the inhabitants of inland districts, on the score both of health and cleanliness, that they ought not to be neglected.

3. *Salt-water Baths.*—In treating of this subject, it is necessary to consider, 1. The nature of a salt-water bath; 2. The rules to be observed regarding sea-bathing; 3. The uses of bathing machines; 4. Of bathing dresses; 5. Of swimming; and, 6. The advantages of sea-bathing in general, together with the objections to it.

1.

Bathing in the sea, is greatly preferable to bathing in fresh water. It excites the action of the solids; stimulates the vessels of the skin; causes an increased determination of the fluids to the surface of the body, and promotes all the secretions. Even persons of the most delicate habits are less susceptible of cold, from being wet with salt, than with fresh water. There is a saline incrustation formed on the skin, in consequence of bathing in the sea, which excites in some measure, the action of the cutaneous vessels, by the common friction of the apparel, arising from a certain degree of roughness and asperity thereby imparted to the surface of the body[‡].

Bathing in the sea, by exposing the body for a time to a medium of lower temperature than it has been accustomed to, combined with the opportunity of breathing pure air, of enjoying moderate exercise, and indulging in agreeable society, and innocent amusements, restores to the constitution a portion of that strength, which had been previously exhausted by breathing the impure atmosphere, and following the enervating modes of life peculiar to great towns. Indeed in many cases, after even a short course of judiciously regulated sea-bathing, it is difficult to recognize the languid and meagre invalid, who a few weeks before had repaired to the sea-coast in a state of great debility, when he is seen once more possessing all the advantages of vigorous and florid health*.

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[*] Buchan on Sea-bathing, p. 94.

[†] Struve's Asthenology, p. 361.

[‡] Buchan on Sea-bathing, p. 42.

2.

The rules which have been recommended in the use of sea-bathing are so numerous, often so contradictory to each other, that it is difficult to select or arrange them with propriety; but the following, extracted from a variety of publications upon this subject, appear to be entitled to the reader's attention.

Rules for Sea-bathing.

(1). Sea-bathing should be continued for at least five or six weeks, at two periods in the year, making June a part of the one, and September of the other. By thus allowing an interval between the two courses of bathing, a more salutary change may be effected in the fluids and solids, than if it had been persisted in for many months without intermission †.

(2). Before bathing in the sea, it is a rule proper to be adopted *by the young and delicate,* gradually to prepare themselves for sea-bathing, by previously using *the tepid bath,* at a temperature commencing at 90°; lowering five degrees each time, and terminating at 65°. This is much better for them, than plunging at once into the sea, at its common temperature, without any previous preparation.

(3). We should never begin to bathe in the sea, till two or three days after having arrived on the sea-coast; during which time, it would be advisable to take a moderate dose of salts, or a tea-cupful of sea-water, every morning before breakfast. Sea-bathing likewise, should not be taken after great fatigue, as coming from a long journey; nor after the body has been long exposed to great exertion, and has incurred lassitude, debility, or chilliness; nor if there is any inward determination of the fluids to the head or the lungs. It is an indispensible rule, never to bathe in the sea with a full stomach, but either fasting, or about four hours after eating. It is hardly necessary to add, that to rush into cold water, if at all unwell, or on the day you have taken medicine, is dangerous in the extreme.

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* Buchan on Sea-bathing, p. 47.

† Bathing in the heats of autumn is not reckoned so useful. The lowest temperature of the sea on our coasts, is about 40 degrees of Fahrenheit; whereas in autumn, it is often from 60 to 62 degrees, and as the atmosphere is probably about 65°; hence it may be called temperate, rather than cold bathing. The lower the temperature we can accustom ourselves to bear with impunity, the better we are enabled to withstand the vicissitudes of the seasons.

(4). The robust and healthy may bathe early in the morning, or before breakfast; but persons of a delicate or feeble constitution, or who are in the habit of dining late, and indulging in the luxuries of the table, should prefer bathing about two hours before dinner. It is better for such persons, to bathe on alternate days, than for many days consecutively. Daily bathing is frequently found productive of lassitude, accompanied by a manifest wasting of the body*.

(5). It is now decided, as a rule in bathing, that even infirm persons should not use the cold bath, without having previously taken some moderate exercise; and, when they bathe, being rather warm than cool. This doctrine cannot be too strongly impressed on their minds. Dr. Currie justly observes, that persons ought not to wait on the edge of a bath, or of the sea, until they are perfectly cool; for if they plunge into the water in that state, a sudden and alarming chilliness may be expected, which would not have been felt, had they been moderately warm when they went into the water.

(6). Attention should be paid to the nature of the bathing place. A bottom of clear sand is to be preferred. Sea weeds are to be avoided; for they frequently contain a species of pointed shell, which is apt to inflict dangerous wounds, if trodden upon.

(7). It has long been considered a useful rule, to have the head first wetted, and indeed many think it necessary to plunge head foremost into the water. It is asserted, that the accumulation of blood in the head, with all its direful consequences, would take place, if this precaution were neglected. This practice, however, has of late been objected to. It is certainly not the mode indicated by Nature, as the bather, till the invention of bathing-machines, must in general have walked leisurely into the water, until he reached a depth suited to his purpose. A sudden plunge is a violent and unnatural exertion, which ought not to be insisted upon *with delicate people;* and several of the bad effects which are ascribed to cold bathing, and which have forced many to abandon it, who were anxious to persevere in its use, may have originated from this very practice. Every person who plunges headlong into the water, will recollect the partial stupor, and unpleasant sensations, which are thus produced, affecting such delicate and sensible organs as the eye and the ear, and, when the water enters the mouth and nose, threatening suffocation. Those who feel no bad effects from the practice, may persevere in it; but those who experience any inconvenience from it, ought at least to put the matter to the test of experiment*.

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* Is not this last circumstance an argument for the corpulent to try the plan of daily bathing?

(8). To have the greatest benefit from cold bathing, it is proper to remain for only a very short time in the water, not exceeding a minute or two. If longer, the body should be kept during the whole time under the surface of the water, and moving about, in order to promote the circulation of the blood, from the centre of the body to the extremities. It is much better to remain completely immersed in deep, than to take repeated plunges in shallow water.

(9). Upon coming out of the water, the body should be wiped dry, with a somewhat rough cloth, and the ordinary dress quickly resumed. It is more necessary to replace the usual vestments quickly, than to be extremely anxious to have the surface of the body perfectly dry, as any wetness from salt water is not likely to be prejudicial.

(10). After bathing, use moderate exercise to promote the return of the heat of the body, taking care that it should neither be violent, nor too long continued.

(11). If chilliness occasionally ensues, breakfast soon after bathing in the morning; or, in the forenoon, some warm soup or broth may be taken. Indeed if immersion, instead of being succeeded by a glow on the surface of the skin, is followed by chilliness, languor, or head-ach, bathing in the sea should by no means be persisted in.

(12). During a course of sea-bathing, and when even the warm sea-water bath is used, friction with a flesh-brush, or coarse woollen gloves, ought by no means to be omitted. It may enable a patient to continue the course, when otherwise he must have given it up.

3.

Bathing-machines are useful in sea-bathing, as the bather dresses and undresses under a cover, is less exposed to cold, can bathe at any time of the tide, and can go in at any depth that may be wished for. At the same time, they have their inconveniences, when they are without awnings, or soaked with rain, or replete with moist exhalations. Nor are there in general, a sufficient number of those vehicles in a proper state to accommodate the bathers. These circumstances contribute to render sea-bathing, in many cases, much less useful than it otherwise would be.

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* Treatise on Warm and Cold Bathing, p. 18. Stuffing the ears with cotton or wool, is a useful precaution.

The practice, likewise, of crowding great numbers in so small a box as a bathing-machine, is highly reprehensible. The air must soon be contaminated, and it must occasion languor and faintness[*].

4.

Bathing-dresses are certainly of use, more especially to the delicate. They should be made of a very open texture, so as to admit the water in every direction. By using them, the temperature of the body is prevented from being so much reduced, as to render bathing in cold water hazardous. To strong and healthy men, bathing-dresses are not necessary; but if they are sickly or tender, such dresses should certainly be extended to both sexes. At any rate, after undressing as quickly as possible, the body should be immediately wrapt in a large dry flannel gown, which should not be laid aside till the very moment previous to going into the water; by this means the shock of immersion will be avoided, and that salutary glow, which ought always to succeed bathing, may in general be insured[†].

5.

The exercise of swimming is healthy and agreeable. After using that exercise, we sleep comfortably the whole night, even during the most ardent heat of summer. Perhaps the pores being cleansed, the insensible perspiration increases, and occasions the coolness we experience[‡]. Those, therefore, who have acquired the art of swimming, should never fail to practise it, while they remain in the water; for, besides the uninterrupted immersion of the body, the muscular exertion required in swimming, tends greatly to keep up the balance of temperature, which is lost by placing the body in a medium so much colder than itself[§].

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[*] Buchan on Sea-bathing, p. 82.

[†] Ibid. p. 65. It is better not to wear an oil-skin cap; but if you do, the ears should not be covered, though they may be stuffed with cotton or wool. Since the custom of wearing powder and pomatum has been abandoned, caps indeed are no longer necessary.

[‡] Cursory Remarks on Contagious Diseases, and on Baths; Part II. p. 17. It is certain that much swimming is the means of stopping a diarrhœa, and has even produced constipation; Ibid.

[§] Treatise on the beneficial Effects of Cold and Warm Bathing, p. 17.

It should be a constant rule, however, even to the most expert swimmer, never to bathe in the sea, in a lake, or in a river, without having a boat near him, or taking another person with him who knows how to swim. It is certainly a weakening exercise, and many who have remained too long in the water, have been so much enfeebled by it, as to be scarcely able to stand when they came ashore; and if this weakness, or a more fatal cramp, comes on at sea, or even in fresh water, the consequences must be dangerous in the extreme[*].

6.

The curing of disorders by the use of the cold bath, is a subject of inquiry, which properly belongs to those who are engaged in the medical profession; yet in general we may observe, that sea-bathing is considered to be more applicable to chronic, than to acute disorders; and that it is most likely to be of service, in complaints originating from a diminished energy in the vital functions, and attended by symptoms of languor and debility[†]. The effects of sea-bathing may be equally beneficial, whether this reduced state of the system is owing to feeble and delicate stamina, rendered still more so, by effeminate modes of living, or is the consequence of a more firm and healthy constitution being impaired, either by habitual indulgence in too stimulating a diet, or by excess in bodily, or in mental exertion. In all cases of doubt or difficulty, however, recourse should be had to an experienced medical practitioner, whose opinion may be much more safely relied on, than the interested advice of owners of baths, and bathing-machines, or their servants, for it cannot be expected, that those whose profits depend on the number of their employers, should have the candour to tell any one of them, that bathing can be of no use to him*.

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[*] [illegible]

[†] [illegible]

On this subject Dr. Buchan has well observed, that before people fly to a fashionable watering-place, for the purpose of sea-bathing, they should ascertain, from the best advice they can obtain, whether they are likely to be benefited by it; otherwise, they may waste their time, and money, in a very unprofitable pursuit†.

SECT. III. *The Warm Bath.*

THE Warm Bath may be considered as one of the most powerful and universal restoratives with which we are acquainted. Instead of heating the body, it has a cooling effect. It diminishes, under a proper system, the quickness of the pulse. It is of eminent service when the body is overheated, either after fatigue from travelling, or severe bodily exercise; or after violent exertion and perturbation of mind. Warm baths, by their softening powers, are likewise, very beneficial to the young. Their advantage to the old cannot be doubted‡.

In discussing this subject, it is proposed to consider, 1. Natural Hot Baths; 2. Artificial; 3. The Rules regarding the Artificial; 4. The Effects of violent Hot Baths; 5. Of Cleansing; 6. Of Medicated; 7. Of Nutritive; 8. Of Tepid Swimming Baths; 9. The advantage of Alternate Hot and Cold Bathing; and, 10. Of other substances used in warm bathing besides water.

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* The following tracts will furnish those who wish to study the subject of bathing, with much useful information. 1. Practical Observations concerning Sea-Bathing, with Remarks on the Use of the Warm Bath, by A. P. Buchan, M.D.; 2d edit. Printed at London. 2. Treatise on the beneficial effects of Cold and Warm Bathing; Printed at Edinburgh, anno 1807. 3. Remarks on Sea Water, by Charles Taylor, M. D.; Printed at London, anno 1805. 4. Cursory Remarks on Contagious Diseases, and on Baths, by M. L. Este, Esq. Part 2.; Printed at London, anno 1811. It were much to be wished, that from these and other works in which bathing is discussed; as Marcand, &c. a complete treatise, including every branch of so interesting a subject, were drawn up.

† See this subject more fully explained, in Buchan on Sea-bathing, p. 126; and in Harper's Economy of Health, p. 27.

‡ Willich on Diet and Regimen, p. 233. It has been ingeniously remarked, that after the hot bath, even in warm weather, the air is a constant bracer, from its greater coldness: but when the cold bath is taken, the matter is reversed.

1. Hot Natural Mineral Baths, such as those of Bath in Somersetshire, being impregnated with volatile, balsamic and stimulating particles, are considered by many to be more powerful in curing diseases than the artificial, which never can be so thoroughly combined with these substances by any art or contrivance*. They are so extremely powerful, however, that they ought to be resorted to, only in cases of great necessity, as in old age, when a sufficient circulation of the blood does not take place; and even artificial chalybeate baths, require a very nice and accurate administration, and are by no means to be lightly resorted to.

Those at Bath are, in fact, the only natural hot baths we possess, the other British hot baths being much below the animal temperature. Cheltenham is but from 53° to 55°; Matlock 66°; Bristol Hotwells 74°; and Buxton 82°†; whereas the common temperature of man is about 98°. The temperature of those at Bath varies. The Public Cross Bath is from 92° to 94° of Fahrenheit, the King's Bath about 106°; and what is called the Hot Bath, about 116°. The foreign mineral baths, however, are much hotter. The hottest at Aix-la-Chapelle is 143°; at Barege 120°; in its neighbourhood 135°; and at Carlsbad, in Bohemia, the Caroline Baths are as high as 160 degrees.

2. Artificial Hot Baths are made either of fresh, of salt, or of mineral water. Some think that the difference between them and natural ones, is not material. Dr. Beddoes, says expressly, 'unless you disregard the expence, 'and find pleasure in a new scene, prepare your tepid, your 'saline, and other baths at home. As baths they will answer the purpose as well as any other‡.'

The great point to determine, regarding Artificial Hot Baths, is the temperature; for, though very strong and healthy persons, may permit themselves some latitude in that respect, and although particular diseases may require still greater extension of temperature, (which it belongs to an intelligent and experienced physician to determine); yet for common and dietetic uses, the greatest benefit is derived from warming and refreshing baths, when they are about the natural temperature of the human body; that is to say, not under 90°, nor above 95° or 98° of Fahrenheit. When they exceed that height, there is a considerable degree of danger from their stimulating effects[*]. It is at a temperature of from 90° to 97°, that the soothing and refreshing effects of the warm bath are chiefly to be expected; and at this degree of heat, it may in general be used with safety and advantage[†].

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* Lynch on Health, p. 474. The Pfeffer Bath on the Alps, is one of the most celebrated in Europe, though almost inaccessible. It was discovered anno 1240, and is of the periodical kind, breaking out in May, and ceasing in September or October. Several treatises have been expressly written on the subject of that bath. It is of the temperature of human blood, and is said to be the purest and lightest water that exists. Many persons are so fond of it, that they pass almost the whole day in the bath; but the physicians who have most recently written regarding them, state, that during a residence of from four to six weeks, it is sufficient to spend six hours per day in the water.—*Marcand de l'Usages des Bains*, p. 41, 42.

† Este's Cursory Remarks on Contagious Diseases, and Baths, p. 28.

‡ Manual of Health, p. 359. The saline being of such importance, it is a most unfortunate circumstance that the pressure of taxation prevents the possibility of persons in the inland districts, availing themselves of so great a blessing.

In ascertaining the heat of a bath, the feel or touch is not to be trusted to; a trial by the thermometer *is the only test that can be depended on.* The neglect of this precaution has sometimes occasioned serious accidents[‡].

3. The following are the rules recommended in regard to warm bathing.

(1.) An hour or two before dinner, when the stomach is empty[§], is the most proper time to use the warm bath for common dietetic purposes. If that bath is used in the evening, it is apt to accelerate the circulation, and thus to produce feverishness and restlessness during the night. (2.) The time of remaining in the bath should in general be about half an hour, and should never be so long as to produce languor, at the time, or afterwards. (3.) The bather should rub himself well with his hands, or a flesh-brush, during his continuance in the bath. (4.) On coming out of the bath, the body should be wiped perfectly dry, previous to the usual dress being resumed. (5.) After the bathing is over, you ought to go about, as you would have done at any rate; no additional covering is required, and you need not be under the least apprehension of catching cold; overheating, however, which may occasion chilliness afterwards, ought to be avoided.

By these few simple precautions, the warm bath will be found a pleasing remedy, which augments, instead of diminishing our natural vigour and strength, whilst it facilitates digestion, alleviates the sense of fatigue, and is followed by sound and refreshing repose[*]. By warm bathing also, rheumatisms, catarrhs, and other disorders, arising from want of perspiration, may be prevented, or cured.

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[*] Chevalier Edelcrantz. Code of Health, vol. ii. Appendix, p. 18.

[†] Buchan on Sea-bathing, p. 174.

[‡] Dr. Taylor's Remarks on Sea-water, p. 5, &c.

[§] The rule in ancient times, was quite different. See No. 4, p. 20.

Very considerable improvements have been made in the science of warm bathing, in consequence of the experiments tried by Count Rumford, an account of which he has published. He has ascertained, that a person may gain fresh health, activity, and spirits, by bathing every day at two o'clock in the afternoon, at the temperature of 96° or 97° of Fahrenheit; and remaining in the bath half an hour. He continued that plan for thirty-five days, and derived from it permanent advantage. He has also proved, that the idea of going to bed after a warm bath, in order to prevent taking cold, is erroneous; that no alteration should be made in the clothing, and that the body, on exposure to the air, is not more susceptible of catching cold, than it was before going into the bath[†].

When the warm bath is employed to produce sensible perspiration, the patient should go into it at the temperature of 94° or 95°, gradually increasing it to 97° or 98°; or, if profuse sweating be required, it may be raised to the 99° or 100°, provided the pulse be not quickened. When the perspiration appears on the face, the patient is to be removed to bed, after wiping the body, and there the sweating is prolonged while it is necessary[‡]. Bathing in that temperature is found of use in lumbago, or violent pains in the loins, and in the irregular gout[§].

4. It is proper here to observe, that though at present it is a rule not to bathe with a full stomach, yet that in ancient times many suffered, because they could not endure to eat before they bathed. Among these, it is said that the celebrated Emperor Titus was one[‖]. The Roman baths,

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[*] See Plutarch's Rules. Code of Health, 2d edit. vol. ii. p. 108; and Buchan on Sea-bathing, p. 207.

[†] See the Count's Observations concerning the salubrity of Warm Bathing, Essay 13, Vol. iii. p. 421. Count Rumford justly reprobates the idea of any advantage being derived from temperate baths of from 55° to 60°. The average rate of animal temperature is 98°; in these temperate baths, therefore, we lie motionless in a temperature colder than our bodies, and consequently must lose heat, instead of getting any, or retaining what we had. Count Rumford has formed plans of baths, well worthy the attention of those who are interested in such constructions.

[‡] Treatise on the Beneficial Effects of Cold and Warm Bathing, printed at Edinburgh, anno 1807, p. 49.

[§] Remarks on Sea-bathing, by Dr. Taylor, p. 35.

[‖] Plutarch's Rules for the Preservation of Health. Code of Health, vol. ii. p. 108.

however, were at so high a degree of temperature, that food in the stomach was necessary to sustain the stimulus of so much heat. At one period of the Roman republic, it was the duty of the Ædiles, to see that the heat of the public baths was properly regulated, before the people were admitted to them; but this beneficial precaution came afterwards to be neglected. It is not then to be wondered at, that debility and disease should be the certain consequence of exposing the body to the action of heat, in a medium that was rendered much higher than its own temperature*.

5. In the tepid bath, the ancients were accustomed to rub the surface of their bodies for the sake of cleanliness, with mallow leaves, or with the dry flower of a species of chick pea, called *cicer*. Common bran, or what is called almond meal, will answer the same purpose, that of rendering the skin soft and pliant.

6. Many attempts have been made to improve the quality of baths, by inserting in them various ingredients, as leaves of plants, &c. These have, in general, been the tricks of quacks. At the same time, it is the opinion of an intelligent physician, that domestic baths, for the use of the aged and the debilitated, may be rendered more efficacious, by the addition of strengthening herbs and roots; and, in particular, for that purpose, three ounces of bark, or from five to six ounces of the flowers of lavender or chamomile, may be employed†.

7. Baths have also been recommended for contributing to the nourishment of the human body. A very general opinion once prevailed, that during the immersion of the body in warm water, part of the fluid was absorbed by the pores of the skin; so that, by impregnating baths with substances of a nutritive quality, it was supposed that life might be supported, when the stomach, from disease, could not admit or digest the proper quantity of food. It is contended, however, that no such absorption or inhala-

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* Marcand de l'Usages des Bains, p. 213. Also Treatise on Cold and Warm Bathing, p. 40. Among the complaints in which warm bathing is useful, the following are in general enumerated.

1. Hectic fever; 2. Chronic weakness; 3. Spasmodic cough; 4. Convulsions from eruptive diseases; 5. Colick pains; 6. Promoting the passage of stones in a fit of the gravel; 7. Rheumatism; 8. Fistulous ulcerations; 9. Obstructions, particularly the stoppage of gall-stones in the gall-bladder; and, 10. Swellings of the extremities.

† Asthenology, or the Art of Preserving Feeble Life, by Struve, translated by Johnston. Printed anno 1801.

tion, *at least for the purposes of nutrition*, can take place by the skin, while the external cuticle remains unimpaired[*].

8. In addition to their other baths, the ancients had the *calida natatio*, or the tepid swimming baths, which might be established in this country for pleasure, if not for health. The proper temperature would be about eighty-seven degrees, as the exercise taken renders a greater warmth unnecessary[†].

9. Alternations of heat and cold, produced either by successive immersions in baths of different temperatures, or by the affusion of cold water upon a body, which has just quitted the hot bath, *(calida lavatio)*, was one of the practices in most common use among the ancients. Hippocrates, when speaking of regimen in diseases, and even in acute disorders, adverts to the precautions which the affusion of cold water, in coming out of the bath, demanded, according to the different kinds of affections to which the body had been exposed; and Galen treats of the same subject[‡]. The Russians and Finlanders, in modern times, immerse their bodies in cold water, after their vapour baths. This alternation from hot to cold, must both harden and strengthen the body, and, above all, render it independent of the most pernicious effects of the vicissitudes of temperature[§].

The system of alternate bathing, is also strongly recommended by Celsus[‖]; and, it is likewise supposed, would be expedient in many cases, particularly to children, as it would assist their growth, and give them strength at the same time[¶]. There is reason indeed to hope, that alternate bathing would afford more health and more relief, in several diseases, particularly in cases of weakness, than any expedient that has hitherto been suggested[**].

10. Besides hot water, the ancients employed other substances, as milk, whey, oil, and wine in a warm state; and by some modern authors, the practice has, in particular cases, been strongly recommended[††].

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[*] Treatise on Cold and Warm Bathing, p. 37.

[†] Mr. Este strongly recommends this plan to a society of gentlemen who meet in London to seek amusement upon the water.

[‡] Hygiene, by Halle. Code of Health, vol. iii. p. 296.

[§] Hygiene, by Halle, p. 310.

[‖] See Code of Health, 2d edit. vol. ii. p. 82. He recommends to use sometimes the warm bath, and sometimes the cold.

[¶] Remarks on Sea-bathing, p. 48.

[**] Este's Cursory Remarks on Contagious Diseases, and Baths, p. 21.

[††] Marcand de l'Usages des Bains, p. 4, 146, and 147. Other sorts of baths might here be mentioned, as Balnea Sanguinolenta, see Bacon in his

SECT. IV. *Vapour Baths.*

IN a vapour bath, the patient is not plunged into a quantity of liquid, but only receives its steam, either upon the whole, or any part of the body that requires it. At Baiæ, there are some natural baths of this description, which gave rise to the idea.

The most celebrated vapour baths of modern times, are those of Grand Cairo, the effects of which are thus described by Savary, in his Letters on Egypt. "After reposing in "vapour for some time, a gentle moisture diffuses itself "over the whole body. The skin is completely purified by "various processes; in consequence of which, the blood "circulates freely, the body feels a voluptuous ease till "then unknown; and the bather almost fancies himself "newly born, and just beginning to live.

"Such are the baths which the Egyptians still enjoy; "and there they either prevent, or exterminate rheuma-"tism, catarrhs, and those diseases of the skin, which the "want of perspiration may occasion. These warm baths "give to the coarsest skin a softness and pliancy, and pre-"serve in it an elasticity, and a delicate whiteness, which "no other known expedient can impart to it*."

Vapour baths were greatly used by the ancient inhabitants of Mexico, as well as by their descendants at the present day. The vapour is obtained by throwing water on heated stones, in a kind of furnace or close apartment, in which the person who uses the bath stretches himself on a mat†.

In Russia and Finland, the vapour bath is used, heated to the temperature of 160° Fahrenheit, and even sometimes higher. In this bath, and at this temperature, the peasants often remain for half an hour, and sometimes for the space of a whole hour; during which, in the winter season,

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Work on Life and Death; (Code of Health, vol. iv. p. 212, 213); and metalline baths, prepared from the scoriæ of iron. Some artificial baths are also prepared with alum and quicklime, boiled together in fine rain water. They are supposed to be highly serviceable in paralytic disorders, and weakness of the limbs. It is only necessary, however, merely to allude to these sorts of baths, in a short discussion of so extensive a subject as that of bathing.

* Este's Cursory Remarks on Contagious Diseases, p. 10.

† Clavigero, Hist. of Mexico, i. 429. In Virginia, vapour baths were used and established in almost every town. See King's Essay on Hot and Cold Bathing, p. 146.

they frequently go out of the bath quite naked, and converse together for some time in the open air, without sustaining any injury whatever. The peasants, indeed, maintain, that without the hot vapour baths, they could not sustain, as they do, during the whole day, their various labours. By the bath, they tell you, their strength is recruited as much as by rest and sleep[*].

The Honourable Basil Cochrane of Portman-square, in London, has tried a number of experiments with the steam-bath, generally at the temperature of 120°, and with great success, in particular in several cases of chronic rheumatism, of catarrhal fever, attended with hard cough and difficulty of breathing, of gout, of gravel, and ophthalmia[†]. By that bath, the bodies of some patients were cleared of a number of impurities, hardly to be credited.

It has been ascertained by an intelligent physician, (Doctor Donald Monro), that the vapour bath will cure a consumption when it arises from defective perspiration. The skin, though dry, like parchment, by the application of steam, will resume its former softness, perspiration is re-established, and the patient is cured, even though a cough has taken place, and the expectoration is purulent[‡].

An ingenious mode of employing steam, has been invented by Dr. Blegborough, called the air-pump vapour bath, which, it is said, is of use in gout, rheumatism, palsy, and other diseases. In a work published upon that subject[§], a question is put, whether it would not be desirable to have a machine constructed, which, instead of a partial application, would include the whole body, as far as the neck, in order that the body might thus be involved in a fictitious atmosphere. It can hardly be doubted, that such a machine would be of infinite use, as perspiration might thus be excited whenever it was necessary.

SECT. V. *Shower Baths.*

THE sensation occasioned by a shower bath, is, in general, considered more severe and unpleasant than the shock of immersion into the sea. It has three advantages, which render it in several cases useful; 1. The application is sudden; 2. The head is first wetted, which prevents the blood being driven from the lower to the upper parts; and, 3. The bath is of short duration; but it has often done harm to delicate persons, from the shock it occasions*.

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[*] See Acerbi's Travels, vol. i. chap. xvi. p. 297, 299.

[†] Este's Cursory Remarks on Contagious Diseases, and Baths, p. 2.

[‡] Marcand de l'Usages des Bains, p. 176. This mode of curing consumptions, is not so generally known as it ought to be.

[§] Facts and Observations respecting the Air-pump Vapour Bath, by Dr. Blegborough, printed in one volume octavo, ann. 1803.

SECT. VI. *Partial Baths.*

THESE are principally applied to, 1. The head; and, 2. The feet.

1. There is reason to believe, that by bathing the head in cold water, inveterate head-achs, continual catarrhs, and defluxions from the palate and nostrils, may be prevented or cured. This system is not only sanctioned by modern practice, but by ancient use, and is well worth the trial of those who are afflicted with such disorders†. Indeed of all the parts of the body, the head receives most benefit from the affusion of cold water, and is a simple and effectual remedy against too great an impulse of blood towards the head, where persons are threatened with apoplexy, disorders of the brain, and other complaints to which the head is subject‡.

2. Bathing the feet ought, if possible, to be a daily practice. They contain a number of those ducts and arteries, through which a considerable proportion of the vapour of perspiration is expelled from the body. Every obstacle, therefore, to a due discharge from that source, ought to be removed. Nothing indicates more a tenderness of frame, than a coldness in the feet; whereas a warmth, and a profuse perspiration there, is a certain proof of good health; for it shows a full circulation, in the small vessels, at a distance from the source of heat and motion§. The perspiration, however, unless daily removed, is apt to become offensive. It is much disputed, whether hot or cold water

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* The shower bath, or *douche*, as they call it on the Continent, is strongly recommended by Marcand de l'Usage des Bains, p. 285; but it cannot be generally applied with safety.

† Dr. Buchan, in his Treatise on Sea-bathing, p. 117, &c. gives some instances, from an old book, on Cold Water, of the utility of that practice.

‡ Willich on Diet and Regimen, p. 243. Might not a shower-bath be contrived, if such a mode of application were judged necessary, that would affect only the head, the shoulders and the rest of the body being protected from the effects of the water?

§ Cheyne's Essay on Health, p. 198.

should be applied in bathing the feet. On the whole, cold water may be recommended for the young, and warm or tepid water for the aged or the sickly*.

The warm bath has been already treated of as a remedy for fatigue. When a large bath cannot be obtained, a bath *for the feet alone*, ought to be made use of. It is found by experience, to communicate new spirits to the weary traveller, almost instantly to remove the sensation of languor, and to reanimate all his faculties*. A hip bath has likewise been of late used in London, and in other places, for various complaints connected with local debility.

Among other partial baths, those by pumping, on particular parts of the body, ought not to be omitted. Hot water is sometimes applied in this manner with much success‡. Where cold water is thus partially applied, the degree of cold may be increased by ice, nitre, or other artificial means.

The advantages to be derived from the application either of hot water, or its steam, for complaints in the eyes, need hardly be mentioned. Steam has likewise been successfully employed in alleviating the pain of the tooth-ach and the ear-ach, an application not generally known.

SECT. VII. *Air Baths.*

THESE are of two sorts, 1. With hot; and 2. With cold air.

1. The practice of applying heated air to the naked body, was much in use among the Romans. Persons who bathed, first staid in a close room, rendered hot *by dry vapours from a fire*, where their humours were rarefied, that they might not go, unprepared, into the hotter rooms. They next went into another apartment, where the heat was still greater, and then into a room, where the hot-water baths were. Thus hot air, was only considered as a preparation for hot water§. On the whole, so much heat was applied,

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* Persons subject to cold feet, derive great advantage from dipping them in cold water, and rubbing them till quite dry with a coarse towel before going to bed. It prevents the feet from becoming tender, or liable to feel cold.

† Willich's Lectures on Diet and Regimen, p. 71.

‡ Strother on Health, p. 326.

§ Code of Health, 2d edition, vol. ii. p. 82. Marcand de l'Usages des Bains, p. 317.

that the bathing would have been considered a severe punishment, for a slave convicted of a crime, had he been compelled to undergo it*.

In regard to a bath *of cold air*, the effects have not yet been fully ascertained, the late Lord Monboddo being almost the only individual who has recently tried that system. It is contended, that by exposing the naked body, for a short time, to an agreeably cool, or even a cold air, similar effects will be produced, as those from a cold bath; particularly a pleasing sensation of heat diffused over the whole body, after being again dressed. There is less danger of catching cold when the whole body is naked, than when a part only is exposed, and the rest covered. It is probable that the air bath, accompanied by friction, might be of use.

SECT. VIII. *Earth and Sand Baths.*

SOME physicians (as Arbuthnot and Struve), have recommended the application of earth, freshly dug up, as serviceable in lameness of the extremities, especially when accompanied with dessication. Care must be taken that the earth is perfectly dry, and without any noxious qualities.

A warm sand bath, for enveloping the limbs, has been applied with success, to patients having paralytic and similar complaints. It is particularly recommended by Mr. Callam, who has an establishment in Great Queen-street, Lincoln's Inn Fields, for weaknesses and deformities in the limbs; and it appears, indeed, from Marcand, that it was an ancient practice.

SECT. IX. *Public Baths.*

IT appears from the preceding observations, that baths ought not to be considered as an idle and luxurious amusement, but as a practice so salutary to the health, that it ought to be facilitated and extended as much as possible. It were much to be wished, therefore, that in some centrical village or town, in every district, there were one or two houses, where people might be accommodated with cold

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* Arbuthnot on Air, p. 208. Struve's Asthenology, p. 335, 336. Marcand de l'Usages des Bains, p. 5. Seneca's Epistle to Varro, p. 86.

ths; and indeed that such a plan were made
general police in every country[*]. Above all,
should be thought of, for establishing public
metropolis, on a scale adequate to its popula-
eople, as was the case at Rome, should be ad-
hese baths, upon paying a moderate sum; and
which admission should be granted, ought to be
the laws. This is the more necessary, as from
of the town, it is so difficult for the lower orders to
sufficient exercise. The arrangements of police,
sufficiently maintain decorum, and prevent any pro-
ous bathing of the two sexes. There would be no
lty in bringing salt water to London, from the coast of
ex, for so important a purpose. According to Fabri-
there were eight hundred and fifty-six public baths at
ne, and some of them were large enough to contain at
e eighteen hundred persons[†]. The ruins of some of
se splendid establishments, which exist at this day, ex-
e the wonder and astonishment of every traveller.
was when these baths were in their glory, that Mar-
nade these famous lines:

> Balnea, vina, Venus, corrumpunt corpora nostra;
> Sed vitam faciunt, balnea, vina, Venus[‡]:

—evidently implying, that bathing formed one of the principal enjoyments of life in those luxurious times.

SECT. X. *Of some Modern Improvements in Bathing.*

THE most important recent discovery in bathing, is the use of the acidulous bath, the nature, and the objects of which, will appear from the following queries addressed by the author, to the ingenious Doctor Helenus Scott, late of Bombay, and the very satisfactory answers he has made to them.

Question 1. "Who first suggested the plan of mixing nitric or muriatic acid with water for bathing?"

Answer. After I had become acquainted with the effects of nitric acid taken internally, I often had reason to lament, that I could not, by the stomach and primæ viæ, fill the constitution more abundantly with this acid, than it is possible to do by drinking it in a diluted state. This suggested the idea of mixing it sufficiently with water, and employing it as a bath for the legs or the whole body. From the facts which regard absorption, and which every body knows, I did hope, that it would be taken up by the absorbent vessels, and produce those changes, of which, from its internal use, I knew it to be capable. I soon found that my conjecture was not without foundation; for by bathing the whole surface, or even the legs, I found, with some patients, that I could produce a redness and some swelling of the gums, and a great flow of saliva, effects very much resembling those which arise from the calces of quicksilver. Although this resemblance is so strong, yet I found that in many respects, the effects of the acidulous bath is materially different from those of the preparations of mercury. The bath reddens the gums, and somewhat enlarges them, yet I never knew an instance, in which it gave rise to fœtor of the mouth, or to that distressing ulceration which are the consequences of mercury. I have indeed from the acid seen the ptyalism very plentiful, and remain for eight or ten days successively.

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[*] Catechism of Health, p. 48.

[†] Este's Cursory Remarks on Contagious Diseases and Baths.

[‡] Wine, women, baths, against our lives combine;
But life's chief joys, are women, baths, and wine.

I may here observe, that the acid I have always used for bathing, was really a nitro-muriatic acid; but to this I was led by accident rather than by design. I procured my acid, by distilling it from common unpurified Bengal saltpetre, by the intermedium of alum. It is evident, that this was an acid, (or aqua regia), in which the nitric acid predominated, but mixed with a proportion of muriatic acid. As I was pleased with the effects of this acid, it is the only one that I employed during my residence in India; and even for internal use, my acid has always contained a proportion of muriatic acid. I now suspect that this is very necessary.

Question 2. "Has the acidulous bath been found of use in any disorders, and what are they?"

Answer. To answer this would require a volume. I shall shortly say, that I have found it useful in several disorders. Where the bones have been foul from syphilis, with disease of the skin and glands of the absorbents, I have seen the happiest effects from it. I believe, that in some of those cases, the fatal poison of lues v. still remained active in the habit. Others will say, that it merely assisted in renovating a broken down constitution, as acids are known to do. Although it is always important to know the truth, yet in many cases of this kind, it is immaterial whether it renovates a much injured habit, or destroys the virus.

It seems to be useful in scrophula, at any rate it is far from injurious.

I have employed this bath a good deal, and with advantage, for obstructed menses.

There is a disease, not very uncommon in India, where the mouth and throat, and I suppose the whole intestinal canal, becomes apthous or full of little ulcers. The nutriment is not absorbed, and the patient gets much emaciated. After long suffering, this, even with young people, proves a mortal disease. In a very bad case which occurred in a friend of my own, after the failure of all the remedies that for a long time were employed, he was restored to perfect health, by using the acidulous bath. While using it, he drank at the same time, as much of the nitric acid as he could, very much diluted.

I have employed this bath very largely, and with advantage, for the chronic disease of the liver.

I need hardly say that it is useful for several diseases of the skin, such as ring-worms, itch, &c.

Question 3. " Is it preferred, using the acid with hot or cold water?"

Answer. I have used it both hot and cold, nor do I know that the temperature has much influence on the effects of the bath. I have commonly made it moderately tepid, as being more agreeable, and more supportable by the sick.

Question 4. " What are the proportions of acid and water made use of?"

Answer. The proportion of acid should depend chiefly on the sensibility or tenderness of the skin. I have commonly mixed such a proportion as should produce a little pricking or smarting in the tender parts of the skin, after being in the bath for a quarter or half an hour. Such a degree of strength seems to be desirable, but it ought never to be carried farther, or we should for a time be obliged to stop the use of the bath altogether.

I have employed for bathing the body or the legs, wooden vessels, just large enough to receive it or them, and *nothing more*. A bath for the whole body, with a sufficient quantity of water, will in general be sufficiently acidulated by an English pint, or a pint and a half, (or a pound, or pound and a half), of the common nitrous acid of the shops. But the quantity must be varied, as I have said, by the sensibility of the skin, and other circumstances. Such a bath will taste about as sour as weak vinegar, but in this no great accuracy seems to be necessary. It might be inconvenient, or somewhat expensive, to lose the acidulated water after bathing. I have therefore warmed a portion of it in glass vessels, for the purpose of making the next bath tepid, or, for the same end I have plunged into the bath when prepared, some closed bottles or jars filled with boiling water, which I remove after they have communicated their heat. More commonly I have thrown away a portion of the acidulated water, and in order to warm the bath for the next bathing, I have mixed with it a sufficient quantity of boiling water, and about eight ounces of fresh acid. The advantage of making the bathing vessel of a small size will thus be evident.

Question 6. " Is there no risk attending the practice ?"

Answer. None. I know of no agent in nature capable of making so material changes in the human frame with so little harm or commotion. The only effect or inconvenience that I have yet met with, is the ptyalism, (effusion of spittle), that comes on in some cases, and even that is not attended with the same inconveniences, or disagreeable circumstances, that arise from mercury. It is necessary, however, to observe, that whenever the nitric acid is used, either for internal or external purposes, it should never be allowed to touch any metallic substance, for it dissolves the metals, and forms injurious compounds with some of them.—Glass or wood ought to be employed.

Question 7. " Is it ever used for the purposes of cleanliness, and what are the proportions?"

Answer. I have myself often used it for the purposes of cleanliness, and for this it has several advantages over common water. It seems to clean the skin like soap, rapidly removing every sort of dirt or sordes. If a bath of this kind is prepared, it may be kept as long as we please, even in hot climates, without ever becoming in the least offensive. It is at the *end* of a month as sweet and agreeable as in the first hour.

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It may be proper to add, that the good effects of the acidulous bath, will much depend on its right management, which can only be acquired by attention and experience. The patient may remain in it, from five to twenty minutes, as he finds agreeable.

In regard to the acidulous bath for the purpose of cleanliness, either cold water may be used, or heated to 96 degrees of Fahrenheit. The best proportion is about two ounces of nitric or muriatic acid, to three gallons of water. Great care must be taken, not to have the water too hot, which may occasion accidents.

Another modern practice, useful for curing various eruptions of the skin, when warm bathing is prescribed, is, that of dissolving some liver of sulphur in the water of the bath.

As it is extremely desirable to procure vapour baths of a cheap construction, it may be proper to mention a plan suggested by Dr. Cumming of Denbigh, which seems well calculated to answer that object. It may be made of any piece of cooperage, of sufficient dimensions, or a common wine pipe, thoroughly cleaned, will answer. Strong iron hoops are necessary, to make the machine steam tight, and to prevent it from undergoing any change of shape. The boiler is distant from the bath about six feet, and the steam pipe is made to enter an inch above the bottom, and to extend itself horizontally to its centre, with the view of equally diffusing the heat. A piece of coarse linen or calico, stretched upon a hoop, with a notch to admit the steam tube, is placed over it: This is called *a diffuser*, and is of a less diameter than the bottom of the bath, in order that a strong frame or grating, to support the bather, may rest upon the bottom of the bath. This sort of vapour bath is said to be simple, cheap, durable, and efficient. The expence of heating it is so trifling, that several persons may bathe at the cost of one penny*. It is certainly well calculated for hospitals, and public institutions; but for private families, a machine constructed on the same principles, in the form of a sedan chair, might answer the purpose equally well, and would be more portable.

SECT. XI. *Of the Effects of Bathing at the different Periods of Life.*

We shall conclude with stating the advantages of bathing, 1. To the young; 2. The middle aged; and, 3. The old.

1. *Children.* Of the advantages of bathing, to children, few have been inclined to doubt. It is much disputed,

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* There is a full description of this bath, accompanied by engravings, in the Transactions of the Society of Arts, vol. 30, p. 181. It is there stated, that it answers the various purposes of a cold and warm shower bath, warm air bath, as well as a vapour bath, the same machine admitting a great variety of applications.

however, whether the cold or the tepid bath ought to be preferred. The celebrated Galen was of opinion, that a cold bath greatly retarded the growth of the body; and he never wished that it should be applied, until a young man had reached nearly the twenty-fourth year of his age; even then he conceived that it should be commenced with the greatest precautions*.

Others maintain, that though it may be proper to begin with a moderately tepid bath, yet that infants may be gradually inured to the cold one. And though it checks redundant growth, yet that it strengthens the soft fibres, and confirms the stamina†. It should not, however, be carried too far, but continued only whilst the children are evidently the better for it. Perhaps alternate hot and cold bathing, according to the doctrine of Celsus, would be the most expedient. If cold bathing should impart to the juvenile body, an unnatural degree of solidity and compactness, by which it is likely to acquire, too soon, the figure and properties of an adult, it ought to be given up‡. By the proper use of the warm bath, however, many infantine diseases may be entirely prevented, teething rendered easy, catarrhs suppressed or greatly mitigated, the rickets cured, and the whole physical condition of the child, considerably improved§.

It may be proper to add, that the occasional use of the warm bath, appears highly conducive to the maintaining the skin in that state of softness and permeability, which is not only a sign of good health, but which certainly tends to facilitate the eruption, and consequently to diminish the danger of the various cutaneous diseases to which infancy is so liable‖.

2. *Middle Aged.*—It can hardly be doubted, that, if not earlier, at least in manhood, cold bathing should begin; and those who have tried, with resolution and perseverance, the practice of bathing in the proper season, or of washing the whole body every morning, will find ample reason to continue it for life. To the infirm and delicate it is in general useful. The frequent use of the bath, and perhaps alternate hot and cold bathing, would in many cases, be the most effectual means of clearing off impurities from the

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* Gal. Comm. 3. In lib. de victu in acutis, C. 44. Edit. de Chartier. Also, Hygiene by Halle. Code of Health, 2d edit. vol. iii. p. 373.

† Harper's Economy of Health, p. 29.

‡ Willich on Diet and Regimen, p. 244.

§ Ibid. p. 82.

‖ Ibid. p. 196.

ed it may be described, as a species of uni-
itic remedy, intimately connected with clean-
n a great variety of cases, one of the surest
ich health and vigour can be restored.

lged.—That distinguished philosopher Adam
marks, that bathing is most natural in climates
ople are rendered idle by the extremes of heat
He adds, there is no inconvenience attending
loss of time, which may be too precious to be so
ed. The Romans, it is true, devoted much time to
they were a very idle people, particularly under the
perors. This objection, however, does not hold good
regard to the aged, who have little to do but to attend
their health†. The healthy may resist impurities, by
ans of their unimpaired perspiration, the elasticity of
ir minute vessels, and the due consistence of their
ulating fluids; whereas the infirm, the delicate, and
aged, are in a different state. The slowness of their
ulation, the clamminess of their fluids, and the constant
rts of nature to propel their impurities towards the skin,
nbine to render, the frequent washing of their bodies, an
ntial requisite to their comfortable existence‡.

old bathing is not to be recommended to the old, or
n to the middle-aged, unless they have been accustomed
it early, and have always persevered in the use of it. The bearing of cold is an affair of habit, and cold bathing, therefore, can never be attempted with impunity, by persons advanced in life, and unaccustomed to bathing. The warm bath, however, is of an opposite description; for warmth, combined with moisture, will support the feeble, and give health to the shattered constitution of man§. Indeed, at the approach of old age, the secretions are less copious, and various other functions begin to be less active and vigorous. The cutaneous secretion in particular diminishing, gives rise to that sordid appearance, and harsh feel of the skin, so common in old age. In such cases, the habitual use of the warm bath, for half an hour, twice

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[*] Willich's Lectures on Diet and Regimen, p. 231.

[†] Code of Health, vol. i. p. 448. In 1807, Dr. Adam Ferguson had used the warm bath for above two years, at the temperature of 96° to 97° of Fahrenheit, and found it of use. He has since been less subject to *taking cold* than formerly, though he goes about freely after the bath. He bathes about the middle of the day.

[‡] Willich on Diet and Regimen, p. 231.

[§] Este's Cursory Remarks on Contagious Diseases, and Baths, p. 58.

a week, may be considered as one of the most grateful enjoyments of declining life, supporting and renovating its diminished heat, and retarding the progress of old age. The celebrated Franklin adopted this practice on the recommendation of Dr. Darwin, and continued the use of it till his death; and, at an advanced age, it afforded him relief, under the excruciating torments of the stone*.

On the whole, we may say of bathing, with a celebrated poet,

> "This is the purest exercise of health,
> The kind refresher of the summer heats:
> Nor when cold winter keens the bright'ning flood,
> Would I, weak-shivering, linger on the brink.
> *Thus life redoubles.*" THOMSON.

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* Zoonomia, 696. Treatise on Cold and Warm Bathing, p. 51.

CHAP. VI.

ON THE MEANS OF PREVENTING, AND REMEDYING THE ACCIDENTS, OR COMMON DISORDERS, TO WHICH MAN IS SUBJECT;

AND, ON THE ADVANTAGES OF COLLECTING POPULAR REMEDIES FOR SUCH DISORDERS.

TO escape the various injurious accidents, and common disorders to which every individual is necessarily exposed, is a circumstance of considerable importance with a view to health; and to be less liable to those accidents, is one of the principal advantages of a retired and quiet life, and indeed one of the chief reasons, why persons in that situation, are so much distinguished by longevity.

A learned author has written a book on the dangers to which persons are exposed, in which there are some useful observations; and in a work of this nature, it is proper to point out the means of preventing or remedying those accidents which are the most usual. But though some precautions are certainly necessary, yet if persons were to be perpetually on their guard against the three hundred and forty-four dangers which this author enumerates*, life would indeed prove a miserable state of existence. It is better to run almost any risk, and even to perish at once, than to live in a state of perpetual terror and misery.

In treating of this subject, it is proposed to consider the means, 1. Of preventing the accidents to which man is most subject; 2. Of remedying them when they do occur; 3. Of preventing and remedying common disorders; and, 4. Of improving the art of medicine, which would render the accidents and disorders to which we are liable, still less injurious.

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* See Le Conservateur de la Santé, ou Avis sur les Dangers qui'l importe à chacun d'eviter, pour se conserver en bonne santé, et prolonger sa vie. Par M. Le Begue Presle, Docteur en Medicine, 1 tom. 8vo. imprimé à Yverdon, anno 1763.

SECT. I. *Of Preventing Accidents.*

THERE is an institution, called "The Preservative Society," founded in the county of Northampton in October 1789. Its objects were, 1. To circulate printed *cautions* for preventing the causes of many of the accidents which occasion death; 2. To publish *directions* for preserving life, under seeming death; and, 3. To grant *rewards* to those who assisted in saving the lives of their fellow-creatures in such emergencies.

The Society likewise extended its views, to the preservation of human life, in various cases of imminent danger, respecting which it was the means of diffusing much useful information*.

1. Among the *cautions* recommended by the Northamptonshire Society for the better prevention of accidents, the following are the chief.

Most sudden deaths come by water; particular caution is therefore necessary, in its neighbourhood.

Stand not near a tree, nor any leaden spout, iron gate, or pallisado, in time of lightning†.

Lay loaded guns in safe places, and never imitate firing a gun in jest.

Never sleep near charcoal; if drowsy at any work where charcoal fires are used, take the fresh air.

Carefully rope trees before they are cut down, that when they fall they may do no injury.

When numbed with cold, beware of sleeping *out of doors*; rub yourself, if you have it in your power, with snow.

Beware of damps under ground.

Air vaults, by letting them remain open some time before you enter, or scattering powdered lime in them.

Never leave saddle or draught horses, while in use, by themselves.

Ride not on footways.

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* Under its auspices, a very able work, entitled, "Observations on Apparent Death from Drowning, Suffocation, &c." by James Curry, M.D. was published. It was printed at Northampton, but there is no date. It is supposed, however, to have been written anno 1791 or 1792.

† Dr. Franklin advises persons who are apprehensive of danger from lightning, to sit in the middle of a room, (provided it be not under a metal lustre, suspended by a chain), sitting on one chair, and laying their feet on another. It is still safer to bring two or three mattrasses or beds into the middle of a room, as they are bad conductors, and to put the chairs upon them. Dr. Priestley says, that the middle of the cellar, is the place of most absolute safety.

Be wary of children, whether they are up, or in bed; and particularly near the fire.

Leave nothing poisonous open or accessible.

When you feel very uneasy, tell your distress early to a steady friend*.

2. The *directions* for remedying accidents are short and simple.

When any accident happens, the common assistants are to do nothing, but as instructed in the printed directions. Only six persons to be ever present at a time. It is recommended to continue the means of recovery for six hours, unless sooner successful, or the body becomes putrid.

As a specimen of the directions, contained in the printed paper, circulated by the Society, the following are given, to be adopted in cases where persons are frozen.

First Person—Rub the body with snow or cold water; take it to the nearest room with a fire-place, but not near the fire.

Second Person—Let a messenger be sent to the nearest physician or surgeon, whose directions, as soon as he arrives, are to be strictly observed.

Third and Fourth Persons—Help the first assistant to bring on warmth by slow degrees, by rubbing, and blowing in, so as to imitate natural breath.

3. In regard to *rewards;* (1.) The person first receiving the body, and keeping it as long as the medical attendant desires, to have one guinea, and to be secured from burial charges.

(2.) Four guineas to be distributed among the keepers, if successful.

(3.) Two guineas to be given them, if unsuccessful.

(4.) The messenger who goes for a physician or surgeon from the nearest town, to receive one shilling per mile.

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* A work has been published by a German author, (Dr. Faust), which he calls "*The Catechism of Health*," which has been translated into English, and in which there are a number of useful hints. It were to be wished, however, that in such a work, the attention were directed to a number of minute circumstances, on which the future safety and comfort of those who learn such a catechism may depend, such as the following.—1. Not to go immediately behind a led horse, he being apt to kick out. 2. Not to walk with your hands in your pockets; for if you slip, you have no means of stopping your fall. Many have suffered by this foolish custom, which having a stick or switch in the hand prevents. 3. Not to go to the leeward of a heap of lime, the dust from which may injure your eyes. 4. Not to go under a ladder where a lamplighter is trimming a lamp. By neglecting to attend to this rule, a promising youth had nearly lost an eye. 5. Not to read damp newspapers. These are merely specimens of rules, the inculcating of which would give to youth the experience of old age.

Such are the outlines of this useful establishment, of which I thought it right to give some account, as it seems to be judiciously planned, and capable of being generally adopted; for the fund only amounted to about 50*l.* per annum, and with that moderate sum the expences were defrayed. If societies on a similar plan were erected in every district, what benefit would not accrue to the public? Indeed, one great advantage of such institutions is, that persons are instructed how to avoid dangers, and how to remedy them when they occur; and by the dissemination of such useful knowledge, many accidents might be prevented, or speedily remedied, with but little trouble or expence.

It is necessary, however, to remark, that the prevention of accidents, depends much upon the establishment of a good police, both in towns, and in the country, which is not so much attended to in these kingdoms as it ought to be. The magistrates ought to be authorised, *and required*, to remove all nuisances in streets: and in the cautions recommended by the Northamptonshire Preservative Society, some particulars are mentioned, which ought to be enforced by law; for instance, filling up holes in any ford or bathing-place, and railing, filling, or sloping off pits in dangerous places. The establishment of a good police, would in these, and in other respects, be productive of the most advantageous consequences, and would save the lives of numbers every year*.

SECT. II. *Of Remedying Accidents.*

WE shall now proceed to state the modes of remedying accidents when they occur, more especially those which terminate, in what may be called *apparent death*. It was formerly supposed, that life quitted the body, in a very few minutes after the person had ceased to breathe, and any remarkable example to the contrary, were beheld with astonishment, as particular marks of divine interposition It has, however, now been proved, in a great variety of instances, that death may be *apparent*, and not real or absolute, and that animation and life, may be restored by human means. Nay, that not only medical men, who, from the nature of their studies and profession, are peculiarly well qualified to be useful on such occasions; but that intelligent persons of every description, may easily acquire sufficient information upon the subject, to render them the happy instruments of recovery[*].

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* Medical police is an extensive subject, which would require a volume to explain, in the manner which its importance would authorize.

1. *Drowning or Suffocation*[†].—Among the many public institutions established in London, connected with the preservation of health, the prevention of accidents, or the means of remedying them, the Royal Humane Society, for the recovery of persons apparently dead by drowning, and the various kinds of suffocation, is distinguished by the energy and success with which those important objects have been carried on; and as the method of recovery recommended by that institution, has been now sanctioned by long experience, it may be proper to give in this work an abstract of the principal rules it has laid down.

General Rules recommended by the Royal Humane Society.

1. Recover the body as soon as possible from the water, then convey it carefully, with the head raised, to the nearest convenient house. 2. Strip and dry it thoroughly, and clean the mouth and nostrils. 3. *If a young child*, place it between two persons in a warm bed. 4. If an adult, lay the body on a blanket or bed, in a warm chamber, if in the winter, or expose it to the sun, if in summer. 5. Rub the body long and gently, with a hot flannel, sprinkled with brandy, gin, or other spirits, and let a heated warming pan, covered with flannel, be lightly moved over the back and spine. 6. *To restore breathing*, introduce the pipe of a pair of bellows, (when no surgical apparatus is ready), into one nostril; and, closing the mouth and other nostril, inflate the lungs till the breast be a little raised; the mouth and nostrils must then be let free: repeat this process till life appears. If oxygen gas, instead of common air, can be obtained, it is a still more powerful stimulus[‡]. 7. The

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[*] Curry's Observations of recovery from apparent death. In *trances*, or cases where the suspension of breathing has occurred spontaneously, a restoration of life has been known to take place, even after interment.

[†] In cases where persons have fallen into, or been immersed in water with their clothes on, or been wet to the skin in rain without the opportunity of changing their clothes, any fever or ill effects, may be with certainty prevented, by the person as early as possible taking internally from fifteen to thirty drops of tincture of opium in a wine glass of water or wine.

[‡] Some have recommended tobacco-smoke to be thrown gently into the fundament by a proper instrument, or through the tube of a pipe, the bowl being covered by a slip of open linen, or other means, so as to defend the mouth of the assistant; but as it is a powerful narcotic, several respectable

breast to be fomented with warm flannel, or blankets strongly wrung out of warm water; and if no signs of life appear, the body should be placed in a warm bath, or hot bottles, or bricks covered with flannel, may be applied to the palms of the hands and soles of the feet. 8. Electricity may be early employed by a medical assistant, commencing with moderate shocks, and at intervals, passed through the chest in different directions, to rouse the heart to action.

On signs of returning life, a tea-spoonful of warm water may be given, and, (if swallowing be returned), warm wine or diluted brandy. The inside of the nostrils may likewise be occasionally touched with a feather dipped in spirits of hartshorn, or sharp mustard. The patient should then be put into a warm bed; and if disposed to sleep, will generally awake restored to health.

The measures above recommended, are to be used for three or four hours; it being absurd to suppose persons irrecoverable, because life does not immediately make its appearance.

The application of a bladder of hot water to the stomach, will likewise be found a convenient and effectual mode of assisting to restore suspended animation.

2. *Fainting-fits.*—Common fainting-fits, arising from the energy of the brain being suddenly suspended, frequently terminate in recovery, after a short interval, without any thing being done; but if that should not be the case, the feet and legs ought to be immersed in warm water, and the nostrils stimulated by applying to them spirits of hartshorn. If these should fail, the same processes as in the case of drowning, should be had recourse to. When faintings, however, take place, from loss of blood, violent and long continued fits of coughing, excessive vomiting or purging, great fatigue, want of food, or any other circumstance of a like nature, seldom any thing more is required, than to inflate the lungs, and to rouse the heart to action by stimulants. For that purpose, warm water, sharp mustard, spirits of hartshorn, sal volatile, eau de luce, or the volatile liniment, may be applied as external remedies, to the wrists, ancles, temples, and parts opposite to the stomach or heart; or, as internal stimulants, from a gill to half a

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members of the medical profession, have objected to its use. See Curry's Observations, p. 53. Some have therefore suggested, the introduction of common air into the rectum; whilst others advise, warm or rather hot water, of from 980° to even 1000° of Fahrenheit; or in addition to warm water, a table spoonful of spirit of hartshorn, or essence of peppermint.

armed wine, with some sugar, or any agreeable d to it; or three or four table spoonfuls of brandy pirit, diluted in two or three times the quantity of Hoffman's drops, in such cases, have also been ded.

ication.—Strong liquors, taken in large quantiently put an end to life almost instantaneously, g the nerves of the stomach in such a manner, to destroy the influence of the brain. If apoes place, some blood must be taken from the at veins, or by applying cupping glasses to the neck. Sometimes intoxicated persons are restored to their senses, (in cases where the pulse and breathings continue, but the body is hotter than natural), merely by applying cloths dipt in *cold* water to the head, neck, stomach, and breast. If the hands and feet, on the other hand, have become cold, warm water, or flannels well wrung out of it, bottles with hot water, &c. must be applied. Either a brisk emetic, however, or a sharp purgative glyster, contribute most speedily to recovery; and care should be taken, that nothing tight should be allowed to remain about the neck; and that when put to bed, the patient should lie on one side, with the head and shoulders raised by pillows†.

4. *Noxious Vapours.*—These are of various sorts, as from malt and other liquors in a state of fermentation,—lighted charcoal,—brick and lime kilns whilst burning,—or vapours occupying deep vaults, common sewers, pump wells, the wells of ships, mines, and other places, that have not a free circulation of air. When the accident is recent, and the body retains its heat, the application of cold water to the head, neck, breast, and other parts, has been found of great service in promoting recovery: but if the body is under the natural temperature, heat must be applied, the lungs diligently inflated, the nostrils stimulated, and some blood taken from the veins of the neck, if they appear turgid‡.

5. *Children smothered.*—From inattention or accident, children are frequently smothered in beds and cradles. This arises merely from the want of *vital air*. If the body be hotter than is natural, it should be exposed to a current of air, and sprinkled with cold water, the lungs inflated, and the body treated as in the case of drowned persons§.

6. *Lightning, or Apparent Death from Blows or Falls.*

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* Curry's Observations, p. 68.

† Curry's Observations, p. 76.

‡ Ibid. p. 63.

§ Ibid. p. 65.

—In such cases, instead of despairing of success, every means of restoring life ought to be adopted. Stimulants of every kind, as in other cases of apparent death, should be made use of, but electricity ranks first in point of efficacy, and should always be employed where it can. The shocks should at first be moderate, and applied to the brain, the spinal marrow, and the heart, but they may be gradually increased in strength, as may be found necessary. Inflating the lungs, however, should not be neglected, nor the necessary means of restoring the body to its natural warmth, where in that respect there is any deficiency. Some stimulant matter may likewise be injected into the stomach, or thrown into the intestines by way of glyster*.

7. *Frost, or intense Cold.*—In many of the more northern countries, the cold is so intense during the winter season, as frequently to stop the circulation, and to destroy life, in such parts of the body as are most exposed to it, as the fingers, the toes, the nose, and the ears. Mortification of the parts affected is the usual consequence, more especially if heat is suddenly applied to them. To prevent such disagreeable consequences, the lost warmth must be restored in the *most gradual manner*, by rubbing the numbed parts well with snow, or washing them for some time in very cold water, (the temperature of which may be gradually raised by small quantities of warm water), and continuing the washing, until the parts affected have regained their natural degree of heat†. The skin being anointed with cold oil, a flesh-brush may then be used with advantage. As soon as the signs of life appear, the patient may take a little warm tea or wine, and may then be put to bed.

8. *Bite of a Mad Dog.*—It is unnecessary to dwell on the shocking effects resulting from this accident, aggravated by the idea, that if the disease does take place, a cure is but rarely effected. Hence it is necessary to take the most effectual means, however painful, of obtaining security.

It is from the absorption of the saliva, conveyed by the teeth of the animal, into the wound he inflicts, that hydrophobia is supposed to proceed. Some have recommended washing the wound with repeated ablutions of warm and cold water. Others imagine, that if the part bitten were washed with a strong lather of the common soft or tub soap, which has both a drying and detergent quality, and if the wound were afterwards wiped with a sponge or towel, that the disease may be prevented[*]. Some have also advised the application of a caustic to the part, which is the common practice in this country, but has sometimes failed. When the object therefore is, to secure an exemption from a most terrific disease, no apprehension of momentary suffering, should induce us for a moment to hesitate, regarding the immediate adoption of such measures as furnish the best probability of success. Palliatives may be used, particularly the soap lather, if surgical aid cannot immediately be had; but there is *no effectual security*, in any case of bite from any animal, in which there is reason to suppose hydrophobia exists, but in immediately cutting out the part, with as little delay as possible, or burning it with hot iron[†]. Nay, the parts immediately surrounding the wound, both at the bottom and sides, must be carefully included, to prevent the possibility of the knife coming in contact with the wound made by the animal. If that should be the case, the excision is not only incomplete, but the knife itself, imbued with the poison, serves to multiply the infection[‡].

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* Curry's Observations, p. 79.

† Ibid. p. 84.

9. *Insects.*—Accidents from insects are either from their stings, or from their getting into the ear or eye.

For the stings of insects, if on the arm, or any where near the eye, eau de luce, immediately applied, destroys the poison. Warm salad oil may also be used with advantage. If the insects get into the ear, the application of camphorated oil, or of laudanum poured into the ear, or of hot steam, where the other remedies cannot be had, may be used with success. If the insects have got into the eye, it should be kept shut until some person can be got skilful enough to extract it, which, by means of soft paper, or soft linen rolled up, with a little grease or butter at the point, is not attended with much difficulty. It is an excellent rule never to rub the eye, should any substance whatever get into it*.

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[*] By some this lather is recommended as a preventive of other infections; but it is not to be relied on, unless accompanied with frequent ablution of hot and cold water alternately. Some philanthropic individual was at the trouble and expence of recommending this remedy to the public by an advertisement in the newspapers. For other heats, the source of much inconvenience and distress, a mixture of salt and water is better than the lather of soap. If the heat is a species of erysipelas, the following ointment, recommended by a celebrated surgeon, will cure it.

℞. Ung. Saturnini,
—— alb. āā ℥ij. M. bene. Fiat. Ung.

[†] A young man, who is now a clergyman in Aberdeenshire, on being bit by a mad dog, applied a hot poker to the wounded place, till it burnt to the bone. This required some fortitude, but the remedy was effectual.

[‡] Parkinson's Medical Admonitions, vol. ii p. 444. I am informed that Tartars in the Crimea have an infallible cure for the hydrophobia, an [illegible] of which I am promised. It is said that salivation by mercury has [illegible] effected a cure.

10. *Burns.*—Various accidents arise from burning, which must be treated in different ways.

In regard to clothes taking fire, instead of trusting to the suggestions of the moment, when the mind is distracted by confusion and terror, it would be much better to have certain rules laid down, which being strongly imprinted on the mind, will serve to direct the safest and most beneficial line of conduct, if such an accident should occur.

1. The door of the room where the accident happens, should not be opened; for the external air rushing in rapidly, increases the progress of the flames; but a call for help should be made, by ringing the bell with violence.

2. The first attempt should be, to tear off that part of the clothing which is on flames; and if in a parlour, to seize the water decanter, which, even for that purpose alone, should be large, and kept always full at those seasons of the year when such accidents are most to be apprehended.

3. The unfortunate sufferer should, as soon as possible, seat herself on the floor, and roll herself on the carpet; or, if there be a hearth carpet, (which even for this use, in such a moment of emergency, should form part of the furniture in every room), it may be used for extinguishing the flames, laid over the burning clothes, or wrapt tight round her.

With regard to burns arising from scalding water†, burning coals, melted wax, &c. if they are slight, and the skin not broken, they may be gently soaked, but not rubbed, before a fire, with spirits‡, or spirits of wine, or æther, which is the best remedy, but expensive. The injured part to be covered with a thin piece of linen, and æther or spirits of wine to be constantly poured over it. This cures by the constant evaporation it occasions. If the burn is severe, the part affected should be kept constantly immersed in cold water, in vinegar, or in spirits.

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* The ophthalmia of Egypt, it is said, is owing, not to dust, but to the immense number of small insects, whose juices are very acrimonious, which get into the eyes, and occasion that complaint. Thin gauze should be employed to protect the eyes against that destructive pest.

† A gentleman, when at breakfast, had some boiling water poured upon his hand, by an awkward waiter, instead of its being put into the tea-pot. He immediately applied a print of butter that was on the breakfast-table, to the part that was scalded, and afterwards oil, and suffered no inconvenience from the accident whatever. It is an excellent plan, as soon after the accident as possible, to get some whites of eggs, and, with a feather, to be constantly anointing the part, until the heat is extracted out of it. Poultices of chalk and vinegar, if immediately applied, will prevent the blistering. I am informed by an intelligent friend, it has lately been discovered, that covering a recent burn with cotton wool, was an effectual remedy.

‡ The candid Sydenham expresses a fervent wish, that the use of spirits might be confined to their external application in burns, for which they are doubtless the best remedy. *Buchan's Brunonia*, p. 100.—For burns in the

Dr. Underwood observes, that a strong solution of soap in water, has long been in use with artificers, employed in any business exposing workmen to very bad scalds, and is a very excellent remedy. But as the soap would take some time in dissolving, and the solution some time in cooling, the Doctor recommends a mixture of six ounces of oil, to ten of water, with two drachms of the ley of kali or potash. This quantity may be sufficient for a burn on the hand or foot, which is to be immersed, and kept about half an hour in the liquor, which will remove the injury, if had recourse to immediately: But it must be repeated as the pain may require, if the scald or burn be of some standing. Should a person be scalded all over, and be immediately put into a cold bath of this kind, and the head at the same time be frequently immersed or well washed with the liquor, 'I believe,' the Doctor says, 'very little injury will ensue*.'—For burns occasioned by red-hot iron, spirits of turpentine, which farriers always have, may be used until medical advice can be had, which is in general necessary.

11. *Poisons.*—These are substances, which, even in small quantities, are capable of producing very prejudicial or destructive effects on the human body. Of these there is a great abundance in nature, and of various kinds; and it is an essential part of that univertal knowledge that ought to be cultivated among mankind, that every one should learn to know, and to guard against these poisons, from the frequent risks to which they are exposed, of being affected by them†.

Poisons may be distinguished as derived from the mineral, the vegetable, or the animal kingdoms.

Among the mineral poisons, *arsenic* is the most common, and by far the most dangerous, as well, from its sudden and violent operation in corroding the coats of the stomach, as from the difficulty in decomposing it, so as to destroy the activity of what has not been thrown up by vomiting‡.

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state of blisters, vinegar is a ready, cheap, and good remedy. Its application should be continued until the pain ceases.

* Parkinson's Medical Admonitions, vol. ii. p. 474.

† Hufeland, vol. ii. p. 75.

‡ A solution of liver of sulphur has been recommended for this purpose, and where it can, it should certainly be used.

Numberless are the instances of people having suffered a cruel death from having taken it, though frequently from ignorance and carelessness, rather than from being intentionally given. It is principally used for the destruction of vermin; but as other modes to get rid of them are known*, arsenic should never be sold, under that pretence, to persons whose respectability is not established. Arsenic, as the foundation of a colour, is used by painters, who know how to secure themselves against its effects; but those who paint for amusement, should never employ it, from the hazard attending it. However poisonous when improperly used, or taken in too great quantities, yet it is a valuable article in the Materia Medica. Unfortunately, however, it is likewise the foundation of several quack medicines, and thence is frequently productive of the most fatal consequences. When a quantity sufficient to endanger the life of a person has been swallowed, it is recommended, that a vomit of white vitriol should be taken immediately, and large quantities of warm water, in which the hepar sulphuris has been dissolved, with a view of emptying the stomach. When that is effected, several doses should be taken, with about a scruple of hepar sulphuris in each. But there is reason to believe, that milk and oil alone will operate as a cure, by expelling the poison, or destroying its power. Let persons, therefore, who have been thus poisoned, drink as much milk as they can, (if in part it comes up, so much the better); and let them, every quarter of an hour, take a cupful of oil of any sort, whether lintseed, almond, poppies, or common oil, (castor oil is the best, if it can be got, for it will act either as a purge or a vomit, or both); and a cure will probably be effected. If violent pains in the bowels succeed the vomiting, there is reason to suspect that some of the arsenic has passed that way, in which case, a glyster should be applied, till the noxious matter is evacuated.

When *corrosive sublimate* has been swallowed, the same means should be made use of as in the case of arsenic, with the addition of half a tea-spoonful of pearl-ashes dissolved in half a pint of warm water. This, used early, and if frequently repeated, will render inert any portion of the poison which is not thrown up. If pearl-ashes cannot be had, lukewarm water poured upon some potashes, and then strained off, may be used in the same way; or soap dissolved in milk or water, may be employed[*].

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* The *nux vomica*, or poison nuts, may be used, which are far less hurtful to man, but at the same time are, in general, a strong poison to animals. It is said, however, that the toucan, a large bird in India, will live upon this substance. The ærated barytes, or ponderous spar, is highly destructive to such vermin, and if accidentally taken, its effects are easily counteracted in the human body, by an emetic, or a purge.

Lead is a poison no less dreadful, and more dangerous, from its acting slowly and secretly; so that their health may be destroyed, before people are aware of the mischief that has been effected. Lead is made into utensils and vessels for various economical purposes, but not without danger in their use, from its noxious qualities being soon communicated to the substance they contain. Wine is often adulterated by lead; and it is well known, what numbers have suffered, who paint their faces with lead-calx, or use washes made from that article. Many painters also, who use white lead in painting houses, or those who inhabit too soon apartments where such paint has been used, suffer materially.

Directions for curing disorders thus gradually brought on, can only be given by the regular physician, who has an opportunity of examining the peculiar circumstances of the case. Various preparations of lead are given as medicine, but should be very cautiously administered.

To the class of mineral poisons also, belong, quicksilver, antimony, and preparations of copper; all of which ought to be guarded against, particularly the last. It is hardly to be credited, the numbers that have suffered from the use of copper vessels in cooking victuals, which might now be prohibited by the legislature, as those made from cast iron are brought to such perfection. In such cases, the advice of an intelligent physician is likewise most desirable; but if that cannot be obtained, vomits, and preparations of milk and oil, as already recommended, are the most effectual remedies.

But the vegetable kingdom furnishes the greatest number of poisonous substances. A list of these has been published, to the amount of one hundred and sixty-four[†]; besides, there are several others not yet scientifically named. The most usual and approved antidote for all of them, after vomiting and purging, are emollient substances, as panado with butter; and wine and cordials ought afterwards to be given, to support the strength of the patient. Turnbull considers the *citric acid*, (or the acid of lemons and other fruits of the same sort), to be, not only the best specific for the scurvy, but the best corrector of vegetable and narcotic poisons [*].

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[*] Curry's Observations, p. 97.

[†] See Quince's Lexicon Medicum, by Hooper, *voce* Poison. Hufeland mentions a book in German, in two volumes, *on that subject alone*.

In regard to laudanum or opium, when it has been taken in too great a quantity, vomiting should, if possible, be excited, by giving a brisk emetic, thrown into the stomach by means of the flexible tube or funnel, if the power of swallowing be lost. But instead of white vitriol, either a table spoonful of antimonial wine, or four or five of ipecacuanha wine, or two or three grains of emetic tartar, dissolved in half a gill of water, or from thirty to forty grains of ipecacuanha in powder, should be employed, because any of these substances entirely suspend the stupifying power of the laudanum, and, if vomiting is not excited, by operating upon the skin, will occasion a very copious sweating, which relieves the patient. To promote perspiration, the feet and legs should be bathed in hot water, or wrapped in flannels well wrung out of water made as hot as possible[†]. Any attempts, by applying blistering plasters, poultices with flour of mustard to the skin, &c. to prevent the person from sleeping, is of little or no use, unless the poison is evacuated or counteracted by some of the remedies above proposed, and, if they succeed, such attempts are unnecessary.

As to animals possessing poisonous qualities, we are most fortunately in a great measure exempted, in these kingdoms, from that source of calamity. In some cases, the leaves of the ash are applied, or sometimes eau de luce; in others olive oil; and in some cases it has been found necessary to apply to the bite, scarification, cupping-glasses, and Spanish flies in a powdered state. It would appear, however, that arsenic is a specific to prevent the effects of this dreadful accident. In the Tanjore pill, so celebrated in the East, white arsenic is in general supposed to be the chief ingredient, and that the other articles mixed with it are of little real utility. Mr. Ireland's experiments in the West Indies were so very successful, that they furnish hopes of the greatest success in the application of that remedy[‡].

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[*] Turnbull's Medical Works, p. 85. Drinking great quantities of milk has been found of great service, if a poisonous species of mushroom has been taken.

[†] If the emetic cannot be got down, double the quantity of any of the articles recommended in the text, should be thrown into the intestines by way of glyster. Ipecacuanha wine is to be preferred to the preparations of antimony, being less apt to occasion purging.

[‡] An account of these experiments will be found in the Medico-Chirurgical Transactions of London, vol. ii. p. 396. The medicines given were, solution of arsenic, or Fowler's mineral solution, two drachms; tincture of opium, or laudanum, ten drops; peppermint water, one ounce and a half, which

12. *Locked Jaw.*—This horrid disorder, which so frequently happens from accident, and of which so many perish in the West Indies, particularly children, is often cured by the application of electricity, which removes the irritation, whence the complaint originates *. A most extraordinary cure of this complaint, by electricity, was effected by Mr. Cuthbertson, mathematical instrument-maker, in Poland-street, London. Sometimes bleeding to fainting repeatedly, has been successful.

13. *Sprains.*—The following method of treating sprains by fomentation, has been found of the greatest service. A piece of coarse flannel, half or three quarters of a yard, is placed in a coarse towel held over a bason ; boiling water is poured on it from a kettle, and then it is to be strongly wrung by two persons. The flannel, thus prepared, is to be applied to the sprained limb, as hot as the patient can bear it. As the first flannel cools, another piece treated in the same way, is to be applied ; and this is to be continued alternately, every three or four minutes, for at least half an hour, or till the patient is tired with the application. The sprained limb is then to be carefully dried, and gently rubbed with the following ointment.

Take camphor two drachms.
Spirits of wine a few drops.
Rub them a little in a mortar, and add
Hog's-lard one ounce.
Rub the whole together.

Take a little of the ointment on a soft piece of flannel, and continue the friction for some time.

If the pain continue severe, the fomentation and friction may be repeated in the course of an hour ; and it ought to be persevered in, till the patient is relieved or tired. After the lapse of another hour, the same process is to be renewed, if it shall be necessary†.

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was added to half an ounce of lime-juice, repeated every half hour, for four successive hours. The parts were fomented, and rubbed with a liniment; also a cathartic glyster was twice repeated.

* See Lowndes's Obervations on Medical Electricity, p. 24.—Also Philos. Transac. vol. lvii. p. 88. A decisive proof of its efficacy.

† Mr. Grosvenor, of Oxford, I am informed, follows a very different practice. He allows no applications but the palm of the hand, and directs the limb to be used, however painful. Under his skilful management, that mode of treatment has succeeded. The following liniment is recommended from respectable authority. It not only gives strength to the parts weakened by a sprain, but in a short time will usually remove any contractions in the joints, and give perfect use to the limb.

Take the yolk, or even the whole contents of a new laid egg, and add

The success of this mode of cure depends, on the heat being applied in the moist way, as intensely as can be borne, without any injury to the skin, and its being continued as long as convenient. The same application is to be had recourse to, as long as the pain and swelling continue. It ought likewise to be noticed, that in the intervals of the fomentation and friction, the limb is to be wrapped up with warm dry flannel; and till the pain be removed, no attempt at exertion should be made. Cold applications should also be avoided till the pain cease. By this management, a sprain may be cured in one-third of the time requisite by the common treatment. In gouty complaints, or rheumatic cases, the same plan, with the ointment, would probably relieve the patient. In the piles, also, and chapped lips, if taken early, the fomentation and ointment are an effectual remedy.

The following is the remedy used by boxers, for sprains. Spirits of wine, one ounce; turpentine, one ounce and a half; opodeldoc*, one ounce; old verjuice, one gill; best brandy, one gill, or two ounces; joint oil, two ounces, or half a gill; mix them well up in a bottle, and rub the part affected with the liniment before the fire, two or three times a-day.

One ounce and a half of camphor, and a pint of sweet oil, rubbed on the part, is a most excellent remedy for stiffness arising from violent exertion.

14. *Bruises*.—It is surprising how quickly professed boxers, recover from the severe bruises they receive. Some apply a poultice made by scraping fresh briony root, and mixing it with water. A root called *Solomon's seal*, is also used with great effect for the same purpose. Either root is very powerful in its operation; hence, if there is the least fraction or corrosion in the skin, a severe inflammation will be the consequence. Goulard is therefore used, in the proportion of two-thirds of a pint of water to a table spoonful of extract of Saturn, constantly applied to the face, with a cloth kept constantly wet, and if accompanied by a proper quantity of Epsom salts, (one ounce and a half for strong men),

thereto, four table spoonfuls of spring water, beat the whole well together with a spoon, and it will form an excellent liniment. It should be made fresh every three days; and the part affected, should be rubbed three or four times a day.

* The following is the receipt for making opodeldoc, from the use of which, the poor would often derive benefit. Take of Castile or black soap one-fourth of a pound, of brandy two or three glasses, and one ounce of camphor; boil them together, and when cold it may be used.

will reduce the swelling in a few hours. It is to be observed, however, that boxers, when trained, are in a better habit of body, than the generality of other persons, and consequently are more easily cured.

15. *Swallowing Bones, &c.*—From inattention, accidents of this sort frequently happen. They may in general be speedily removed by a piece of whalebone, to one end of which, a button of sponge ought to be affixed.

If a pin, or any other sharp pointed substance, should stick in the gullet, and cannot be extracted, however painful it may be, it is much better to wait the spontaneous loosening of the substance, than to attempt forcing it up.

If the substance has got into the stomach, it is very imprudent to endeavour to hasten its passage through the bowels, by giving any opening medicine. Just the contrary system ought to be adopted. Indeed the best plan is, to take some milk alone, or mixed with eggs unboiled, as by the coagulation which takes place, the substance may become so involved, as to prevent its doing injury to the stomach; and, on the same principle, opening medicines, which render the fæces thin, should be avoided; as, by allowing the fæces to obtain some firmness, there will be the greater probability of the pointed parts of the substance being so sheathed, as to prevent them injuring the intestines*.

16. *Cramp in the Stomach.*—If the life of any person is threatened by a cramp in the stomach, occasioned by drinking cold water, after being much heated, by sultry weather, violent exercise, &c. Doctor Currie recommends the application of a bladder, nearly filled with hot water, at 110° or 115° of Fahrenheit, to the stomach; at the same time, any tight parts of dress should be thrown loose, the body kept as nearly as possible at its natural heat; and friction, and other simple modes of restoring life, adopted, till medical assistance can be obtained†.

17. *Cuts.*—For slight cuts with a knife, or any other sharp instrument, the *Riga balsam* is an excellent application; and no family should be without a small bottle of that valuable remedy, as it stops the bleeding immediately.

Such are the most common accidents of a serious nature to which mankind are exposed, and the most effectual means of remedying them.

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* Parkinson's Medical Admonitions, vol. ii. p. 454.

† Code of Health, vol. ii. Appendix, p. 50.

SECT. III. *Of Preventing and Remedying Common Disorders.*

THERE are several ailments to which the human frame is subject, and some of them of a serious nature, which may be either prevented or cured by very simple means. Without presuming to give medical advice, I shall venture to state the result of my own experience, or the substance of any communications which have been transmitted to me regarding some of these more common disorders.

1. *Sore Throats**.—Some years ago, the author was extremely liable to sore throats; but being convinced that friction, by strengthening the parts, would prevent such complaints, he applied the flesh-brush, beginning with one of softer materials, and increasing the strength and harshness of the brush, as the skin, from use, was able to bear it. He has never since had a sore throat. The brush should be applied night and morning, and may be used in three ways. 1. In its common state; 2. Heated before the fire, when the weather is cold and wet; or, 3. After moistening the outside of the throat with spirits. This last mode is only necessary, where a sore throat has made some progress; in which case, the inflammation within, is removed by the heat excited without.

By the adoption of these hints, there is little risk of any individual ever suffering from a common sore throat†; and, by the use of the flesh-brush all around the ears, many have likewise been cured of deafness, after it has lasted for some time[*].

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* For the habitual sore throat, or quinzy, (an inflammatory swelling of the tonsils and circumjacent parts), which is the torment of many people half their lives, and is generally mistaken for a violent cold, because it occasions a tickling in the throat, the consequence of which is coughing; Dr. Beddoes recommends the following gargle.—Take of pounded galls, three drachms; of boiling rose-water, ten ounces. Infuse for three hours. Then filtrate or pour off the liquor; and add, of alum three drachms; of spirit of nutmeg, or any other spirit, three ounces. Hold a little of this frequently against the very bottom of your mouth, with your head backwards. The strength of the gargle may be varied; and it is often of use, in recent cold, where there is no sore throat. Sucking a piece of galls, will sometimes brace the parts, and remove the disposition to this sort of sore throat. *Manual of Health*, p. 211.—Others recommend nitre lozenges. But rubbing the throat with a flesh-brush *without*, and gargling *within*, either with very cold water alone, or mixed with a little rum or brandy, will be found effectual.

† I am informed, by an intelligent friend, that when the throat indicates symptoms of becoming sore, ulceration may be prevented, by taking some powdered sugar, wetting it with brandy, till it has the consistence of honey, and occasionally taking a tea-spoonful of this mixture.

2. *Colds.*—By tying a silk or cotton handkerchief round the neck, and covering even the mouth and nostrils when out in cold and damp weather, colds may in general be prevented.

The Indians, who, for the sake of performing their religious ablutions, live near *tanks*, or ponds, in damp cabins, prevent the mischiefs thence likely to arise, by having their faces covered with their turbans, (which are unrolled for that purpose), during their sleep.

In Africa, it is a common practice with the natives, when they are exposed to winds supposed to be injurious to the human constitution, to draw down their turbans to cover the nose and the mouth; and when they sleep out at nights, more especially in the autumn, (when cold unwholesome dews are apt to fall), they uniformly cover their faces with their turbans. Indeed the riders on dromedaries, when they are exposed to the *sirocco*, or the hot winds of eastern climates, not only cover their faces, but stuff their ears, to prevent the admission of unwholesome air into any part of the body[†].

There is certainly every reason to hope, that the adoption of this practice, may be of general benefit, more especially to those who are subject to complaints arising from a cold, wet, and variable climate. When persons go out of hot and crowded rooms, into the cold open air, it is essentially necessary to take such a precaution, for preventing the injurious effects likely to result from so great a change in the atmosphere. To soldiers and sailors, whose health is at all affected, and who are exposed to severe weather, it may be of use; and, by its adoption, invalids in general may much sooner be enabled to go abroad, even in severe weather, than could otherwise be practicable.

These observations have been amply confirmed, both by experience and authority. The ingenious Mr. Spence of

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[*] Some penetrating sort of grease, may likewise be rubbed on, by a little wool or cotton, in the interior of the ear, when the deafness originates from the hardness of the wax. This, with friction, will probably be effectual.

[†] A watchmaker in London, whose family connexions died of coughs and pulmonary complaints, from a practice they had of always sleeping with their mouths open, even in the coldest weather, and who could not cure himself of that custom, prevented any injury from it, by covering his mouth, when he slept, with a thin silk handkerchief, which he called a hot-bath.

Drypool, informs me, that the practice has been found extremely useful at Hull; and Dr. Beddoes strongly recommends the same plan, to those invalids, who are afflicted with the chronic catarrh, as likely to enable them to take proper exercise, and to be frequently in the open air, which otherwise they might be under the necessity of avoiding. The great object is, to give heat and moisture to the air we breathe, when it would otherwise be cold and dry. It is obvious, that the construction of these *muzzles*, (as the Doctor calls them), ought to vary with the case. Each individual will soon find how many folds, of whatever material he may choose to employ, will communicate heat and moisture enough to the air he breathes, without injury to the freedom of respiration. A similar idea seems to have occurred to Dr. Hales, who found, that the air might be breathed much longer, when, in the act of respiration, it was made to pass through *mufflers*, or several folds of cloth dipped in vinegar, a solution of sea-salt, or oil of tartar*. Such mufflers would be of particular use in cases of consumption, where the lungs are in so delicate or diseased a state, that they cannot easily bear the action of atmospheric air, without some such defence.

In regard to those short and dry coughs, with which many persons are so much troubled, as to prevent their sleeping at night, opium is often recommended, but when taken in a liquid state, it frequently disagrees. It is now, however, ascertained, that by taking opium *in pills*, which gradually dissolve in the stomach, there is scarcely any risk of sickness, and that it answers the purpose of preventing the cough during the night very effectually. Two pills may be taken when going to bed, each containing from twenty to twenty-five drops of laudanum, as may be thought advisable. They may be taken in water-gruel, prepared in this way: Let the gruel be sweetened with brown sugar, and mixed with milk to the amount of one-third of its quantity. This makes the gruel particularly balsamic.

3. *Consumptions.*—This fatal disorder in general originates from a malconformation of the chest, and its too great narrowness. Where such a personal defect does not exist, an intelligent clergyman in Scotland, (the Rev. Dr. Stewart, now minister of Erskine), who was originally bred

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* Essays, p. 266.—Arbuthnot on Air, p. 105.—Gregory's Economy of Nature, vol. i p. 416.

to medicine, has recommended a plan, which has certainly succeeded in several instances, when applied at the commencement of the disease. Dr. Stewart's remedy is,

A wine glassful of water,
A tea cupful of vinegar,
A dessert spoonful of rum.

This mixture to be applied with a sponge, to the neck and chest, morning and evening, for a considerable length of time; and gradually to the whole body. Besides this application, Dr. Stewart recommends much exercise without doors; and a nourishing diet, in particular meat to breakfast, and good malt liquor to dinner. When the patient has gained strength, sea-bathing may be tried.

4. *The Rheumatism.*—The late ingenious Mr. Cumming of Pentonville, assured me, that he had cured the rheumatism, by a union of friction and electricity. His friend Mr. Forsyth, had tried electricity in the usual way, *with shocks*, but he had received no material benefit from it. Mr. Cumming then proposed, to try the effect of electricity on a new plan. Having an electrical machine, he took it to Mr. Forsyth's house, and prevailed upon him to stand upon an insulated stool, after pulling off any part of his dress that had any silk in it. Then connecting Mr. Forsyth with the conductor of the electrical machine, he became charged with the electrical fluid, when in that state the hand of the operator being rubbed gently on the part affected, it had the effect of a smart brushing, and the thinner the clothing between the hand and the skin of the patient, the more gentle was the effect. The sparks were rendered more pungent by putting a glove upon the operator's hand, for which purpose, worsted is preferable to leather. Silk by no means should be used.

By increasing the thickness of the cloth between the skin of the patient, and the hand of the operator, the effect becomes more powerful.

In this instance, the relief afforded was beyond expectation. The patient, who had been confined to his couch for some days, was, after the above application, able to walk up stairs, and became totally relieved.

A noble Lord has recently communicated to me, (August, 1815), a simple mode, by which he was cured of a most severe rheumatic complaint.

He had suffered incessant pain in his hips and shoulders, for almost thirteen months, particularly at night, and could not walk without the support of sticks, or some person's arm. He cannot recollect how it happened, but it came on gradually.

After trying innumerable other remedies without success, he was advised, by a most respectable member of the medical profession, to put on both drawers and an under waistcoat of chamois leather, which, in a very few days, gave him so much relief, that he could walk, and even ride, without pain; and in the course of three weeks at the most, he was entirely cured. This was in the year 1807-8; and he has had no return of the complaint since.

The drawers were tied at the ancles; but that is not necessary, unless the lower joint of the leg is affected with rheumatism. The under waistcoat had sleeves. It lapped over a little; had no buttons; but was tied with strings in the front. He left off wearing the drawers and under waistcoat about three years ago, (ann. 1812), in order to preserve them as a resource, in case the rheumatism should return. They were left off in the spring, and a flannel waistcoat and cotton drawers, used in their stead, which he had commonly worn before the rheumatism had attacked him.

He has recommended it to a great many people of all ages, and with almost invariable success. There is at this moment in the house with him, a gentleman of 70 years of age, who has been entirely relieved by it, though he had suffered for many years from rheumatism.

The leather washes like linen; only it must not be washed in hot water. The chamois leather feels cold and uncomfortable for the first day or two; but it soon becomes more comfortable than flannel. The price is about sixteen shillings a set. It is proper to have several sets, and to change them frequently*.

5. *Calculous Complaints.*—Of all the disorders to which man is subject, those of a calculous nature are amongst the most severe. They not only occasion the greatest excruciating torture, but, in the case of stone, there is no prospect of getting rid of it, except by means of a most cruel

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* Mr. Craig of Cally informs me, that, in Ireland, they find the following remedy an effectual cure for the rheumatism. Take six drachms of Dwarf Elder, and make it into one pint of tea; and add,

Mindererus's Spirits, half an ounce,
Sal Polychrest, three drachms,
Antimonial wine, two drachms,
Rose-water and syrup of orange-peel, each half an ounce.

A small tea-cupful to be taken three times a day, when the stomach is most empty.

operation, the success of which cannot be depended on, and which does not always prevent the recurrence of the disease. Fortunately, however, the means of alleviation have been discovered. There are three plans for that purpose, which may be tried at the same time, for the greater certainty. 1. Jelly made of the blackberry currant, and, still better, of the common bramble berry[*], to be taken as a sweetmeat to breakfast and at tea, which operates diuretically; 2. Acidulous soda water, which is known to be of great service in complaints of the kidneys, ureters, or bladder, and to have a tendency, not only to prevent the formation of a calculus, and to stop the increase of one, but to diminish, as a solvent, such as are already formed[†]; and, 3. The use of magnesia, as recommended by Mr. Brande[‡], chemical professor at the Royal Institution in London, which possesses all the advantages of soda, without any pernicious effect. At the same time, however effectual magnesia may be in some calculous cases, it is not so in all. The proper discrimination can only be made by chemical analysis.

Hay, in his Essay on Deformity, likewise mentions another remedy. He states, that he took Mr. Stephen's medicine in a solid form, at the rate of three ounces per day, for five years, when he changed it for the same quantity of Castile soap, which he afterwards reduced to two ounces, and latterly to one ounce, with about an English pint of lime water, mixed with milk. This regimen he incessantly pursued with the happiest effect, and he is convinced that it would be generally beneficial in calculous complaints[§].

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[*] I am informed, that the late celebrated surgeon, Mr. Pott, firmly believed, that the bramble berry, made into jams, was the best specific for gravellish complaints.

[†] Soda water, prepared in the best manner, contains a small quantity of carbonate of soda, which has a tendency to correct acidity in the stomach; and also a proportion of carbonic acid gas, part of which soon escapes when the water is poured out, but part remains united to the water for some time after. This gas acts as a solvent of all the different earths; and thence is of use in removing calculary concretions. As the carbonic acid is a powerful solvent of metallic substances, soda water should never be manufactured in copper vessels. The sodaic powders sold as a substitute for soda water, produce an effervescence when dissolved; but the solution is very different indeed from soda water, both in its constituent parts, and in its properties. A quantity of *alkaline tartrate* may thus be taken into the system, which tends to increase, rather than to remove, obstructions, and in many stomachs must be highly injurious.

[‡] Philos. Trans. 1810 and 1813.

[§] Code of Health, second edit. vol. ii. Appendix, p. 191. For calculous some recommend fifteen drops of the oil of turpentine, (Chio is the best), upon a lump of sugar.

6. *The Gout.*—I was informed in a letter from a friend, dated 1st December, 1814, that, by the advice of a respectable physician, he began, about two years ago, to take magnesia for the gout, being a complete cripple. He had taken the French medicine, about ten bottles, which had nearly proved fatal to him. For the first week he took the magnesia pure, (Godfrey's common magnesia, and not the calcined), ten grains every night in a wine glass of water. He then, by the Doctor's advice, added five grains of rhubarb, and never omitted taking it a single night for eighteen months. By that time he found the use of his limbs nearly restored, the fits of the gout more inflammatory, and of very short duration, about thirty-six hours in one place.

He now takes the magnesia and rhubarb only once a week; as he found that, after it had the effect of weakening the gout, it also weakened digestion, which made him leave off the habitual use of it.

If any person, not such a cripple as this gentleman was, wishes to adopt this remedy, he would advise him, to take it only three times a week, and indeed, as a preservative, only once a week.

Another gentleman states, that he has also experienced the good effects of magnesia in the gout. The quantity he takes is, from fifteen to twenty grains every night going to bed, in a little water, or milk where it can be had good. As to diet, he no otherwise attends to it, than he should have done, if he had not taken the magnesia, and as every person subject to the gout should, namely, taking little wine, and that of one sort, no malt liquor, and simple food. This gentleman prefers the subcarbonate of magnesia, directed by Mr. Brande, to the calcined earth.

Other remedies, however, for this disorder, are not wanting. About sixty years ago, an old woman in the neighbourhood of Horsham in Sussex, professed to have a remedy for the gout, which she applied in the form of a plaster. The secret was purchased from her, and turned out to be a common blister. It ought to be put on close to the part affected, from the size of one shilling to half a crown piece, and applied as near the time of a crisis as possible. The blister should be quick, and of the true Spanish breed. Relief is generally obtained in twenty-four hours; and the sore will generally be dry, in three dressings, with Turner's cerate only. Sir B. Shelly informs me, that he has applied blisters nearly sixty years, and at the age of eighty-two, is still in tolerable good preservation. He has applied them only to the extremities, having never had the gout elsewhere. He is thoroughly convinced, as is the apothecary who attends him, that there is no danger in the practice.

The Rev. Dr. Cartwright was the first person who informed me of this remedy. He happened, in the year 1769, to spend some weeks at Horsham, where he accidentally heard of it. Being assured by a medical person, that it was universally and successfully practised in that part of the country, and that he never knew any bad consequences attending it, he resolved to try the blister in summer 1770, and had the satisfaction of finding, that it completely removed the pain of the gout, in the space of an hour or two, that is to say, as soon as the blister began to operate. The blister was large enough to cover the part affected, and he had never any occasion to keep the blister open after the first discharge. Another person, who tried the blister, on his recommendation, found it equally beneficial; and it is quite a mistaken notion, that the blister either aggravates the pain, or repels it on the nobler parts*; but though the blister cures the fit, it does not eradicate the disease. Dr. Cartwright, however, was fortunate enough to discover a medicine, which attacks the enemy as effectually within, as the blister did without. Its composition is as follows:

Castile soap, two drachms,
Succotrine aloes, one drachm,
Gum guiacum, two scruples,
Camphor, one scruple.

This to be made into thirty-six pills, with any syrup, (as syrup of saffron), two to be taken every night at bed time. As soon as they are perceived to have a tendency to affect the bowels, they must be discontinued, but resumed as soon as the bowels have returned to their usual habit.

By the use of this medicine, Dr. Cartwright, after having had several fits of the gout, has been entirely exempted from it *for above forty years.*

7. *Chilblains.*—This disorder, though trifling to appearance, and easily cured when taken early, does much mischief if it is not checked in the commencement. If once thoroughly seated, it is apt to recur, while, from the want of exercise which it occasions, a foundation is laid for seve-

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* Others have likewise tried blisters for the gout with success, particularly in cases of mere inflammation; but in some constitutions, they are said to produce sores difficult to heal. Leeches have also been tried successfully. An issue in the legs or feet, might, perhaps clear the body of its gouty humours, or draw them to the extremities.

ral more dangerous complaints. Where a tendency to this disease is known, and likely to occur, the parts affected should be frequently rubbed with the naked hand, with a flesh-brush, or with flannel, and as much exercise should be used, (in particular the skipping rope), as the state of the diseased parts, if the complaint has commenced, will admit of. If there be no sore, stimulating medicines, such as camphorated spirits, spirits of turpentine, &c. may be applied to the parts affected. Sudden and considerable changes, from cold to heat, should be avoided, and such coverings used, as will defend the parts from the action of cold, and have but little power in conducting heat; as slightly woven woollen, and cotton, or wash leather, which is loose in its texture, and downy on each side*. Wearing socks at night is also expedient.

The celebrated Tissot, however, is of opinion, that cold applications are greatly preferable. He himself, as many others have been, was attacked with this complaint, from having accustomed himself to wear too warm a muff. His remedy is, to fortify the skin of the hands and feet, *by the application of cold water*. Every morning and evening, from the end of autumn, children should be obliged to dip their feet in cold water; and the habit being once contracted, there will be no difficulty in continuing it throughout the winter, even when the water is ready to freeze. Children, likewise, should never be permitted to warm their hands before the fire; nor should boys wear gloves, unless some particular circumstance should require it†.

In general, the use of worsted next the skin, has been considered the best preventive against chilblains; but Mr. Callam, of Great Queen-street, Lincoln's Inn Fields, who has a number of children under his care for various complaints connected with the feet, recommends cotton gauze socks or stockings next the skin, as greatly superior. He contends, that cotton gauze, (which is so thin as not to increase the size of the foot any thing material), will neither produce a sore, nor irritate one, if it has taken place; whereas the friction of worsted, causes the itching to be much greater, rubs the swollen parts into sores, adheres to them, and produces a lingering ulcer. He strongly advises those who are apt to have chilblains, never to rub their feet or legs, if they itch from cold, as by bathing warm vinegar, or putting on at night, a stale e, or a mustard poultice, any itching may be y prevented, with little trouble or expence. Where s are apprehended, the feet should be bathed every warm salt water, and after they are thoroughly he cotton socks should be immediately put on to go . If more warmth is necessary, worsted stockings also be put on, and in particular may be worn above cotton, during the day.

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* Parkinson's Medical Admonitions, vol. ii. p. 464.

† See Tissot on Health, p. 467.

sipating Wens.—Tissot states, that if wens are of considerable size and duration, they are incurable by any nedy except amputation*. But it is now known, that sipating a wen is one of the simplest of all operations, by mere local application of salt and water, or of sea-water, the following manner: A quantity of salt and water put into a saucepan, and boiled for four minutes. The rface of the wen is then frequently bathed with it, both lst the water continues warm, and after it becomes cold. s to be repeated ten or twelve times a day, stirring up e salt from the bottom of the bason, into which the water been put. In one instance, on the eleventh day from first application, a small discharge was observed; and the assistance of a gentle pressure, the whole contents were soon emptied, without the smallest pain, and without blood. The time of cure varies; sometimes only a few days, but sometimes it requires three or four months. The application, however, gives no pain or inconvenience of any kind, nor any previous notice of the discharge, till it actually takes place†.

9. *Complaints in the Eyes.*—I have already stated, in the Chapter on Customs and Habits, the means of removing slight inflammations in the eyes, by means of hot water and steam. It may be proper likewise to mention, that, for those complaints in the eyelids, which are so extremely troublesome and inconvenient, the *unguentum citrinum* of of the Edinburgh Pharmacopœia, is by far the most effectual remedy. It is applied with a hair-pencil, either at night, or, if necessary, earlier. It heals those ulcers whence a humour issues, which irritates and inflames the eyes.

10. *Dropsical Complaints.*—I have received, from a re-

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* See Tissot on Health, p. 400.

† Buchan on Sea-bathing, p. 121. Thus, a popular remedy effects the cure of a disease, which a great physician had declared to be incurable, except by amputation.

spectable quarter, an account of a mode of curing dropsies by means of liverwort. The following is the mode of application: Take of green liverwort two handfuls, and put them, picked and washed clean, into a small pot, with a quart of water, which place on a slow fire to boil, till the liverwort be quite soft. Then mix it with barley meal or barley flour, to the consistence of a poultice; after which, take a quart of house-snails, and pound them in a mortar, shells and all, until quite fine; mix them with the poultice, and apply the whole, as hot as the patient can bear it, to the region of the navel; allow it to remain twenty-four hours; and repeat the application until the disease be cured. The poultice will cause profuse perspiration; act as a powerful diuretic; draw the water to the part covered by it, and carry the whole off, either in the natural way, or through the pores of the skin. The patient should lie in bed, and as much as possible on his back, in order to let the poultice act more readily; and as the bandages slacken by the discharge of water, they should be drawn tighter*.

Mr. Craig of Cally, to whom I am indebted for this information, informs me, that liverwort has long been considered as a cure for dropsies, and also for liver complaints, in some parts of Ireland; and that he saw it first applied some years ago, in the county of Donnegall. It is also used in some parts of Wales, where the leaves are dried, pounded, made into pills, and taken internally. It is proper to observe, that this is not a new remedy; for in Hooper's edition of Quincy's Lexicon Medicum, it is mentioned under the name of '*Hepatica terrestris;*' and it is there said, that though it is seldom used in this country, '*yet that it appears to be a plant of no inconsiderable virtue.*'

Since Mr. Craig brought this application from Ireland, he and others have tried it in a number of cases with great success; and it has also been found extremely effectual, when applied to legs swelled by an accumulation of water.

10. *Corpulency.*—This is in fact a disease, for which various remedies have been suggested; a general view of which may not be unacceptable.

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* The same application of liverwort and barley meal, but without the addition of snails, to the region of the liver, has been known to cure the most obstinate liver complaints, after every other remedy had failed: but though, in dropsical cases, the poultice often acts instantaneously, yet in liver complaints, the application must be persevered in for six weeks or two months, according to the obstinacy of the complaint, before a cure can be expected.

1. *Acids*. These produce such deleterious effects on the organs of digestion, when taken in sufficient quantities to effect the diminution of fat, that they cannot possibly be approved of.

2. *Castile Soap*. This remedy has been attended with success[*], taken to the amount of a quarter of an ounce, dissolved in water, which may be mixed with milk, but it has not always answered the expectations formed of it; and either soap or vinegar, in the opinion of Cullen, may occasion a saline and acrid state of the blood, which may have worse consequences than the corpulency they were intended to correct.

3. *Physic*. This is not to be recommended, as the constant use of medicine is so injurious to the stomach.

4. *Digitalis*. This has been found of advantage, assisted by exercise and regimen, but ought not to be taken without medical advice[†].

5. *Bathing*. There can be no doubt that constant bathing will diminish corpulency[‡]. Perhaps the bathing should be alternate; *warm* on one day, to diminish the fat, and *cold* the next, to strengthen the frame.

6. *Liquid Food*. This ought only to be taken in the greatest moderation, and in small glasses or mouthfuls at a time. Acid wines, like hock, ought to be preferred to sweet wines, and cider to malt liquors; for where the former is the usual beverage, the people are leaner than when the latter is commonly drunk. Plain water, or mixed with a small proportion of the best vinegar, may be taken. Vinegar is better than the juice of lemons, having passed through the process of fermentation. Tea or coffee should be taken by corpulent people without cream.

7. *Solid Food*. The bread should have the bran in it, so as to be the more digestible. Vegetable diet to be preferred: hard dumplings excellent. If any animal food is taken, let it be fish, or lean and dry meat. No eggs or butter, and the less sugar the better.

8. *Exercise*. There can be no doubt that exercise will reduce corpulency. Walking, for instance, to the top of a

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[*] Some have scraped a small quantity of Castile soap, and taken it with their tea or chocolate in the morning, with great success.

[†] See an ingenious little treatise, entitled, "Cursory Remarks on Corpulency," 2d edition, printed an. 1818, p. 48.

[‡] Dr. Huxham, in his treatise on Fevers, relates the case of a person, who was so much *wasted by daily bathing*, that his life was considered to be in danger. He recovered his former health, by restricting his bathing to three times a week.

high hill every morning, will effect it; but training for athletic exercises is still more effectual[*]. Reading aloud is also of service. The constant use of the flesh-brush ought not to be neglected.

9. *Sleep*. This ought not to be indulged in, beyond four, five, or six hours, when reduction of fat is the object. The bed also should be hard, and the room airy.

10. *Air*. A person is more apt to get corpulent, or to remain so, in a country where the air is thick and heavy, than where it is light and pure; and consequently more likely to extract various noxious substances from the body. Residence in a mountainous district, is therefore to be preferred by the corpulent.

11. *Typhus Fever.*—Two remedies have been discovered for this disorder, of which I propose giving a short account. 1. By yeast; and, 2. By muriatic acid.

In regard to yeast, Dr. Thornton, in his Philosophy of Medicine, has given a history of the discovery of this remedy, and its mode of application. The quantity given, is two table-spoonfuls every three hours. The Rev. Doctor Cartwright has applied it in numerous cases, with the greatest success; and Doctor Thornton, who has the poor of the parish of St. Giles's under his care, among whom the most common disease is putrid fever, generally finds, when this medicine is administered, that the disease is got the better of.

As to muriatic acid, its utility in low or typhus fevers cannot be doubted. The physicians who attend the Westminster Hospital, principally trust to it as a remedy in that species of disease, and the loss of patients has been proportionably very small. In the commencement of all fevers, blood-letting and purgatives are frequently required, but when the disease loses the inflammatory type, and the patient becomes low, there is probably no remedy more efficacious than muriatic acid. The quantity administered is rather more than a dram in twenty-four hours. It is commonly given in an infusion of roses, or in table beer. The most obvious effect is, a diminution of the frequency of the pulse, which Doctor Buchan has known reduced from 120 to 90, in the course of six hours from the commencement of its use. It possesses the further advantage, of forming a beverage in general very acceptable to the sick*.

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[*] By training, corpulency is much diminished. When Cribb went to Scotland to be trained for his great contest with Molineaux, he weighed sixteen stone (fourteen pound to the stone); but before he fought, he was reduced forty-one pound. A gentleman was reduced by training, from nineteen stone, to sixteen stone four pounds. He had before a fullness of blood in his head, but by training, was restored to perfect good health. Walking is favourable to leanness. By his thousand mile match, Captain Barclay was reduced, from thirteen stone seven pounds, to eleven stone two pounds.

12. *Head-achs.*—I am indebted to a respectable lady for the following most interesting account of a mode practised in the East Indies for curing head-achs.

"A native doctor attached to Colonel Allan Macpherson's battalion of Sepoys, on the Bengal Establishment, had cured several gentlemen who belonged to the suite and escort of the late Colonel Upton, Ambassador from the Supreme Government of India to the Court of Poona, of severe head-achs.

"After the return of the escort, this circumstance having been reported to a lady in Calcutta, who was affected with head-achs of so violent and excruciating a nature, that the most serious consequences were apprehended, she was induced to permit the native doctor to apply his remedy. He desired that she should recline herself across a bed, with her head over, so that it was lower than the side of the bed. He then applied a little cotton to the mouth of a small phial, containing a liquor of a tint somewhat resembling the colour of lemon-juice. The cotton having been thus wetted, he squeezed three or four drops of this liquid into each nostril. After remaining in this posture a few seconds, he asked her how she felt; and, upon being informed that she had an inclination to sneeze, he desired her to raise her head, which was no sooner done, than a torrent of clear water rushed from her nostrils, and from her mouth and eyes, into a bason, in greater quantity than she would venture to state, but certainly not less than might suffice for washing the hands. Her head-achs never returned. The only injunction the doctor gave was, that she should avoid animal food, and beware of catching cold for a few days. Her husband was present when this cure was effected, and underwent the same experiment soon afterwards for head-achs less severe, and with the like effect, excepting that the discharge from the head was less copious. All the entreaties that could be used to procure the receipt were ineffectual*."

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* In the Appendix, No. VI. will be found a short, but able account by Doctor Buchan, of the origin and progress of muriatic acid, as a remedy for fevers. It certainly should be tried in the yellow fever, and as a remedy for the plague. Mr. Sutherland's, (of Westminster), mode of application, in which he has been eminently successful, is as follows: Muriatic acid, two drachms; simple syrup, two ounces; water, one quart. Mix four table-spoonfuls, to be taken every three hours, or oftener, according to the symptoms. The above quantity was generally taken in twenty-four hours.

It is to be hoped that every exertion will be made, in every part of India, to ascertain the nature of this application, and in what cases it is useful, (for the knowledge of it was not probably confined to this individual doctor, who is since dead), and of every other means of curing diseases and accidents, which can be discovered in that extensive country. If the plants used were known, our own physicians would soon discover the proper mode of application. It cannot be doubted that a vast fund of information relative to the uses and qualities of plants, and other articles employed in various disorders, may be found in the East†.

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One circumstance to be attended to in regard to popular cures in general, is, that there are great varieties of the same disease; and that what may answer in one species, may not succeed in another. The shades of difference, which, though minute, are often important, can only be distinguished by the experienced physician, to whom all the usual disorders of the human frame are familiar. It is extremely desirable, therefore, in every case where a cure is effected, that not only the remedy, but all the circumstances of the case, should be described with as much accuracy as possible.

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* Col. Macpherson confirms the success of this application; and adds, that he could never prevail on the doctor to give him the particulars of this mode of cure, though he had often asked him. There is reason, however, to hope, that the nature of this remedy may be ascertained. The late Dr. Valangin used frequently to cure head-achs, by desiring the patient to snuff up a mixture of the yellow oxyd of mercury, (formerly called Turbeth mineral), with a little sugar. It often produced a prodigious discharge of serous fluid from the nose, without sneezing. Doctor Buchan of Percy-street, to whom I am indebted for this information, has often cured obstinate complaints in the head, by the same means. Turbeth mineral is of a very bright yellow colour, and it is possible that a solution of it, may be the Indian remedy.

† A printed book, called Rhudes's Hortus Malaberricus, contains some information regarding the virtues of the plants therein described; and the natives have many books on those subjects, in which will be found a classification of plants, according to their qualities, as cooling, heating, &c.

SECT. IV. *On the Improvement of Medicine, by collecting Popular Remedies for Common Disorders*[*].

I WISH much that it were possible for me to do justice to this most interesting subject; from the full conviction, that if it were properly stated, *and brought home to the feelings of mankind in general,* it would greatly promote the happiness of the human race.

Many persons, and among them are several respectable physicians, entertain a very humble idea of the medical art. Others, of great knowledge and experience, are of a different opinion, and consider it to be a humane and noble science, by means of which, much good may be effected. But whatever may be the case at present, there is every reason to believe, that if medicine were brought to all the perfection of which it is capable, there are few common disorders that might not be alleviated, or even cured[†]. For that purpose, however, it would be necessary to discover the popular remedies used in this, and in other countries, and to have their effects fairly tried, and fully ascertained.

In regard to domestic cases[‡], an intelligent physician informs me, that he has long wished to see a publication, containing an account of such popular remedies as have stood the test of long experience.—Very early in his professional life, his attention was attracted to this subject, by witnessing the cure of a sore leg, by an old woman, in the course of a fortnight, which had baffled the skill of more than one experienced surgeon for many months. By the same method, of which it cost him no small degree of trouble to obtain the knowledge, he has frequently succeeded in curing the same species of bad leg, where others had failed. Since that period, he has omitted no opportunity of acquiring a knowledge of popular remedies; being convinced, that practical medicine is chiefly founded on experience, and that no mode of cure can have long stood the test of experience, without some foundation in fact. He adds, there is a woman now in Westminster, who has frequently succeeded in curing cases of that dreadful disorder in the face, called "*Noli me tangere*," which usually proves fatal; but she will not disclose her method.

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[*] The progressive amelioration of health, which Sir Gilbert Blane has proved from authentic public documents, is one evidence that the practice of physic has already improved. It appears from the returns of 18[illegible], that the mortality of all England and Wales, was then one in 47; but in 181[illegible], it proves to be only one in 49. (See the third volume of the Medico-Chirurgical Transactions, published by the Society in London). This gives reason to hope, that medicine may be still more and more improved. Much may be expected from Mr. Grosvenor's improved system of friction; and, in some particular cases, from what is called *pneumatic medicine.*

[†] The medical art is still but in its infancy; and it is impossible yet to foresee to what perfection it may reach, not only in consequence of the new improvements which chemistry daily furnishes, but also of those which may be made by the discovery of new and valuable plants, both in countries already known, or hitherto unexplored; and indeed the new uses to which old medicinal plants may be applied, and which public protection and encouragement would soon bring to light.

[‡] It is astonishing by what accidents cures may be discovered. A nurse at the Westminster Infirmary, far advanced in years, had been for a long period subject to an asthma. She was employed by the surgeon of the hospital to rub in mercury for a venereal complaint, and by the time the operation was completed, the effects of the asthma ceased. The surgeon has since prescribed, with success, small doses of calomel for asthmatic complaints, in the cure of which he is successful. In an old medical book, entitled, "An Essay on External Remedies, by R. Kennedy, Chir. Med." printed in London, anno 1715, the author says, p. 74, "I have [illegible] "mercurial preparations with very good success, *for the asthma.*" This proves that useful practices are given up and neglected. Kennedy was a great traveller, and in this work has a chapter "Of the Variolæ or small-"pox, the manner of ingrafting or giving them, and of their cure." He

But such improvements in medicine are not confined to this country: in others, important discoveries may be made, a knowledge of which would greatly tend to promote the progress of the medical art. If the attention of mankind were directed to that object by public rewards, new discoveries might be the result; there being few disorders, probably, for which nature has not provided a remedy, either in the vegetable or in the mineral kingdom. That so much has been already effected, considering that the art of medicine has hitherto received but little public countenance or encouragement, is a matter to be wondered at. To the credit of this country, there is one exception; a liberal sum having been voted by parliament, to the celebrated Jenner, for having promulgated the means, which had been accidentally discovered in Gloucestershire, of preventing, by vaccination, the ravages of the small-pox, and for having confirmed the practice, by successful experiments.

there mentions, "That it was then a custom in some parts of the Highlands "of Scotland, to infect their children, by rubbing them with a kindly pock, "as they term it." See p. 157.

CHAP. VII.

ARTICLES OF A MISCELLANEOUS NATURE,

ON WHICH HEALTH AND LONGEVITY IN SOME MEASURE DEPEND.

THE circumstances of a miscellaneous nature, which are of importance in promoting individual health and longevity, are, 1. Rank or situation life; 2. Education; 3. The particular occupation or profession adopted; 4. Connubial connection; and, 5. Amusements.

1. *Rank in Life.*

It has been justly observed, that it is not the rich and great, ner those who depend on medicines, who attain old age, but such as use much exercise, breathe pure air, and whose food is plain and moderate*; and it is certain, that persons of that description, stand the best chance of living long. The plainness of their food exempts them from many diseases, and renders those by which they are attacked, less dangerous: the labour they must necessarily undergo, not only clears their blood from many noxious humours, but also gives them sound repose at night, by which their strength is renovated. Exposure to the vicissitudes of the seasons, makes their frame hardy and vigorous, and enables them longer to retain the possession both of their physical powers, and their mental faculties; and being exempted from those violent passions which agitate the higher orders, their minds are not affected by various circumstances, which occasion so many fatal disorders among persons of a superior rank in life.

Hence it would appear, that the situation of the middling, and even the lower orders of society, is peculiarly favourable to health and longevity.

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* Hufeland, vol. i. p. 164. Fothergill, Annual Register, anno 1786. Natural History, p. 64. See some excellent observations on this subject, in Short's Tables of Bills of Mortality, p. 145, 146, 147.

It is contended, however, that the situation of the lower orders is miserable, for want of richer food, finer liquors, better houses, and more substantial clothing. Let us consider these points separately.

1. Those who account it an advantage to live on great quantities of rich food, do not consider the consequences it occasions. If they were to have a luxurious repast spread before them, and were told, that if they ventured to partake of it, they were immediately to be subjected to the severest tortures, the instruments of which were placed before them, few would wish to take a share in such an entertainment. Yet, in fact, the case is nearly similar with those who live luxuriously, for though the tortures they must experience are not immediate, yet they are certain. The gout, and various other complaints, the necessary consequences of these rich repasts, sooner or later do attack them, and make them sincerely wish that they had lived on plainer fare, and had not yielded to the temptations placed before them.

2. The stronger sorts of liquor are certainly of use as medicines, but are not essential for health or strength. They may be of service in curing diseases; but the constant use of them, not only destroys their salutary effects as medicines, but occasions a variety of disorders. There is no liquor, on the whole, so well calculated for the use of man, as the element of water itself, provided it is freed from every noxious mixture. In a preceding part of this work, where the subject of liquid food is treated of, (See Part I. Chap. II.) the means are pointed out, by which this valuable beverage, in its purest state, might be rendered accessible to the poorest individual, in almost any situation, where water is at all to be had in sufficient quantities.

3. In regard to warm houses, there is reason to believe, that the exclusion of air, is too often carried to an excess, in these northern climates. In proof of this assertion, it may be stated, that Doctor Lyne, an Irish physician, who died of the small pox at the age of 85, built a house in a peculiar manner, so as to have the full benefit of the circulation of air. Every window had another opposite to it, none of which he ever suffered to be shut or glazed; but they were continually kept open, without any defence against the weather. The room the Doctor lay in, had four open windows, two on each side of his bed. It was remarked, that for fifty years together, nobody died out of his house, although he always had a numerous family. Upon

his death, his son glazed all the windows, soon after which there were several buried out of the house*. He carried this doctrine to such an extent, as to maintain, that no house was wholesome, "where a dog could not get in under "the door, and a bird at the window†."

4. Nor is warm clothing, except to infants, so essential as many people imagine; at least much depends upon custom. At first, an addition to the usual quantity is found of service; but the effect of it is soon lost. A story is told of Lewis XIV. who observed a person having the appearance of a gentleman, on a very cold day, dressed in silk, with his hat under his arm, and seemingly not in the least affected by the severity of the weather; whereas the King, in a covered carriage, clothed in the most substantial manner, and even with all the advantages of fur, could not keep himself warm. The King, struck with the circumstance, stopped his carriage, and requested the gentleman would inform him how this could happen. "If your Majesty, (he said in a whisper), would do as I do, *put all your wardrobe on your back at once*, you would be as warm as I am." And, in fact, a person, by custom, may be as well protected from cold by moderate clothing, unless carried to an extreme, as by the heavier and more substantial.

But were it admitted, that, in some respects, more especially during sickness and old age, the situation of the poor is not so eligible as those who move in the higher spheres, or have more wealth at command; yet the circumstances of the lower orders, ought to be compared, not with the higher ranks in civilized society, but with man in a barbarous state, and then the advantages of the situation in which they are now placed, will appear more evident. Without going to the wilds of America, or to the forests of New Holland, it would appear from the most unquestionable authority, that the inhabitants in the more mountainous districts of Scotland, lived, in times not very remote, in a most miserable manner ‡; nor was England itself in a much better state about two or three centuries ago. Erasmus ascribes the frequent plagues in England, to the nastiness, dirt, and slovenly habits of the people. "The floors," he says, "are commonly of clay, with rushes, under which lies, unmolested, an ancient collection of beer, grease, fragments, bones, spittle, excrements of dogs and cats, and every thing that is nasty*.

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* Smith's State of the County and City of Cork, vol. ii. p. 429. Watkinson's Philosophical Survey of Ireland, p. 189.

† In China, we are told, that in warm weather, they have no other door but an open matted screen; and the windows are either entirely open, or of thin paper only.—*Barrow's Travels in China*, p. 349.

‡ See in particular the Statistical Account of Scotland, parish of Fortingall, vol. ii. p. 458.

Holinshed, who lived in Queen Elizabeth's reign, gives a very curious account of the plain, or rather rude, way of living of the preceding generation. There scarcely was a chimney to the houses, even in considerable towns. The fire was kindled by the wall, and the smoke sought its way out at the roof, or door, or windows: The houses were nothing but wattling, plastered over with clay: The people slept on straw pallets, and had a good round log under their head for a pillow; and almost all the furniture and utensils were of wood†. Such representations, however well authenticated, seem hardly credible in these times, yet there is reason to believe, that many common beggars now possess more of the comforts of life, than were enjoyed, even by the higher descriptions of persons in these rude and barbarous ages.

2. *Education.*

There is perhaps no subject that has been more completely probed to the bottom than that of education. Not only has every particular connected with it been frequently discussed, but it has been treated by such able men, as a Locke, a Milton, a Rousseau, a Helvetius, a Chesterfield, and many other distinguished authors, who have anticipated almost every idea, *in a moral point of view*, or connected with politeness of behaviour, that could be brought forward regarding it; and in various other publications, *the physical part of education* has been ably explained‡. Little, therefore, remains to be done, but to give some general views of the doctrines which have been already promulgated, intermingled with such observations as may have occurred to the author, in consequence of his own personal experience in the management of a numerous family.

The importance of education, both physical and moral,

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* Erasmus, Epist. 432.

† Hume's History of England, vol. iv. p. 449; and Note S. at the end of that volume.

‡ See Les Œuvres de Pierre Camper, edit. 1803, vol. iii. p. 223, where he writes an essay, in answer to the question publicly proposed, regarding the rules the most proper for the education of children, and the most likely to preserve man in good health, and to enable him to reach a great age. See, also, Buchan's Domestic Medicine, chap. i.; and his Advice to Mothers, in 1 vol. 8vo. printed anno 1803.

timated too highly. The future health and
ness of every individual must, in a great measure,
upon it. At the same time, it is not to be wondered
so few should be completely educated. Consider,
moment, how many years must elapse before the help-
fant reaches maturity; how many various particu-
ust be adverted to, and how the attention of the pa-
must be distracted, when they have a numerous
to bring up. These difficulties must embarrass even
who possess independent fortunes; but they must
, with painful severity, upon persons who are placed
oderate circumstances, and still more upon such as are
pelled, from the profits of their daily labour, to main-
themselves and their families.

considering the subject of education in general, with-
lluding to particular professions or situations in life,
k it may be treated of under the following heads:
od; 2. Clothing; 3. Air; 4. Exercise; 5. Amuse-
ns; 6. Habits; 7. Health; 8. Personal appearance
behaviour; 9. Mental information; and, 10. Moral
religious instruction.

few cursory observations on each of these heads, is all
he limits of this work will admit of.

The subject of diet having been already fully discussed
preceding part of this work, it is unnecessary to dwell
much upon it at present. It may be sufficient to remark, that too much stress seems in general to be laid upon the necessity of the child being nursed by the mother. Where that can be effected, it certainly ought to be preferred; but where any circumstance renders it either inconvenient or impracticable, it cannot well be doubted, that the milk of any other healthy woman, living on a plain diet, and having nothing but an infant to attend to, must be as nourishing, and as well calculated to rear an infant, as the milk of its own mother, if her mode of living be either luxurious or irregular, or if her attention be distracted by a number of other avocations*. In many cases, it is attempt-

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* The ingenious author of the Manual of Health, p. 273, has given us some judicious observations on this subject. He remarks, "that suckling, if accompanied by weakness, or want of appetite, is attended by the risk of bringing on the tubercular inflammation. Yet, whether it be that novel writers and poets, with the whole race of sentimental penmen, who seem, as it were, *ex officio*, ignorant of the human economy, though none are more forward to give directions respecting it, have succeeded in their pernicious efforts to stir up the tender affections against the health,—as if it were not of greater

ed to rear children, not by the milk of a nurse, but by the spoon. This system, however, cannot possibly be recommended; and the most fatal consequences have resulted from it, wherever it has been tried to any extent. Where the experiment has been made, Camper observes, that the milk of goats has been found the best substitute for that of women; a circumstance not generally known, and which it is proper, therefore, to mention*.

When milk becomes no longer necessary, there is no food more wholesome than boiled oatmeal, with milk or small beer; the meal, however, ought to be properly prepared, as is almost uniformly the case in Scotland; that is, the grain ought first to be thoroughly dried in a kiln, it ought then to be cleared from the husk; and, lastly, ground into meal. The flour of wheat is frequently made use of, but it is of too glutinous a nature, and occasions costiveness, whereas the meal of oats is laxative. Each, therefore, may answer best in different circumstances. If panada is used, it is better made of biscuit, than fermented bread.

As children advance in years, their diet must be more nourishing, but ought always to be simple. Camper agrees with Plato in preferring, for the children of the rich, roasted meat to boiled. It is singular that he should condemn potatoes as food, more especially for children. Owing to their viscidity, he considers them as indigestible, and he quotes Boerhaave in support of that opinion, but the potatoes of Holland, are in general not of a mealy sort, but glutinous, and consequently more difficult to digest. He particularly recommends, however, on the authority of Xenophon and Lord Bacon, the eating of water-cresses, (cresson alenois, the *nasturtium aquaticum*), the use of which, he affirms, is one of the best means of preventing putrefactions, whether of the fluids or solids†. It is also one of the best remedies against the scurvy, to which we are all more or less liable, even in our youth.

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importance, that a mother should preserve herself for her child, than give it the breast for a few months,—we do not always prevail by our endeavours to put a stop to this practice, where it is most hurtful.

* West India goats are easily fed, have no rank smell, give much milk, and the flesh of the ewe-goat, when properly fattened, is not much inferior to mutton; they seem to be a race of animals that ought to be propagated in this country.

† An eminent physician, however, states, that the daily use of this herb is only fit for strong stomachs. In others it occasions flatulences and eructation, and sometimes heartburn.

d to wine, he thinks that it should not be given
n more than once a-day, after dinner, and then
quantities. Hippocrates allowed wine to young
; but Plato, on the contrary, thought they should
it till they were eighteen years of age.

thing has been already treated of in a former part
work, (Part II. Chap. I.); it is only necessary,
re, to remark, in this place, that it cannot be too
. The great rule to be observed is this, that a child
have as many clothes as are necessary to keep it
and that they be made quite easy for its body.
ess, properly, does not consist in going thinly clad,
eing able, well clothed, to stand any weather. The
, that disease so fatal to children, is principally, if
ltogether, owing to thin clothing.

Pure air is more essential to children than even to
n people. The tenderer the organs, the more sensibly
must be affected by any defect in so essential a requi-
of life. In warm countries, fewer children perish,
se they are constantly out of doors; and in cold coun-
those children are the healthiest, who are the most
only in the open air. Indeed, being hardily reared,
is respect, lays an admirable foundation of future
gth and vigour. Those, for instance, who, when
g, have constantly breathed the pure atmosphere of
the mountains of Yorkshire, Wales, Scotland, or Ireland, never fail to experience afterwards, even when they are exposed to the dangers of an unwholesome atmosphere, the advantages of this early treatment. They resist better the impression of the elements; they are less liable to be attacked by the gout, and other chronic disorders; and they enjoy health, whilst persons of the same age, differently bred up, are the martyrs of disease*.

4. An early attention to exercise, as a branch of physical education, cannot be too strongly recommended†. The ancients, it is well known, considered what they called the Gymnastic Arts, as one of the most essential branches of

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* Parents often err, however, by exposing their children to cold, and bathing them in cold seasons of the year, with a view of *hardening* them. This should never be attempted, without great precaution in regard to clothing. The young of all animals delight in warmth.

† Dr Beddoes, in his valuable Treatise on Consumptions, attributes them so much to inactivity, that exercise, properly managed, it cannot be doubted, would frequently prevent that fatal disorder, to which the natives of these kingdoms are so peculiarly liable. P. 117, 125.

education. It is unnecessary however, to dwell on the subject of exercise in this place, as its nature and advantages have been already discussed in a former part of this work[*].

There is one point, at the same time, which it may be proper here to take notice of. Milton, in his "Tractate on "Education," justly observes, that the training up of youth, cannot be considered as complete and generous, unless it fits a man to perform justly, skilfully, and magnanimously, all the offices, both private and public, of peace and war. On these principles, it seems to me essential, that boys should be trained up to military exercises. Even girls are the better of being taught how to march. It makes them erect in their posture, and teaches them how to balance their bodies properly, when either walking or dancing. It also expands their chest, and improves their shape and appearance. In regard to military exercises for boys, not only marching, but learning the use of the musket is so essential, in critical times, with a view of keeping up the military spirit of the nation, that it ought to be enforced by legislative authority, and every boy at school taught, how to protect himself, and how to defend his country.

5. A numerous family, under a regular system of management, is a great source of pleasure to their parents, for besides the delightful task "*of teaching the young idea how* "*to shoot*," it is in their power, with such a family, to have a ball, a concert, or a theatrical representation, whenever they may incline, and they are thus rendered independent of other people, either for society or amusement. It is likewise both a pleasant, and an useful plan, to have little dances, and other entertainments, for young people and their companions, provided regular hours are kept, without which they are highly prejudicial. Such meetings not only amuse the children, but teach them a politeness of behaviour, and a self-possession in a crowd, which is of great advantage to them in after life. It also lays the foundation of future acquaintance and connexions, which may be of mutual service.

6. It is of great importance to teach children useful habits when they are young[†]. They ought to be taught

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[*] See Part I. Chap. V.

[†] Children, when very young, get into a habit of eating their food too quickly, particularly fruit, and other substances of which they are fond. To prevent their acquiring this habit, amusing devices might be employed, as cutting a pear, an apple, a piece of cake, or any other article of the

The studies of children therefore ought to be directed in such a manner, as not to disgust them, or to make them abandon them ultimately. They should be made as much as possible, a source of amusement, rather than a burdensome task. It is of use to make them recite their lessons with a loud voice, and to get some of them by heart. Indeed, to read aloud some instructive work, like the Spectator, &c. is an excellent and a wholesome practice both for young and old. When children are accustomed to this practice early, any prejudice against it is removed, and much useful knowledge may be disseminated in a family.

To what extent the memory should be exercised, is at the same time, a difficult point to determine. It is certainly right, where a youth has naturally a good memory, to give it ample occupation; but to force it too much, weakens the intellectual faculties, and injures the health. It is better to give occupation to the talents and judgment, than to overload the memory.

Among the various branches of knowledge to be acquired in youth, that of arithmetic is one of the most important, and it ought to be more attended to than is generally the case. Indeed, unless children are accustomed to figures at an early period of life, they take a dislike to the study, and a prejudice against all professions where arithmetic is necessary; whereas, in every situation in life, a knowledge of that useful science is essential.

As children must often be admitted to new privileges in the family, as breakfasting in the parlour with their parents, dining, or drinking tea there, &c. &c. I have found it a good rule, to put them, for a month before the privilege is given, "*in a state of probation,*" insisting on their acquiring, in the interim, some personal accomplishment, as a good carriage, &c. I am persuaded, that much may

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sufficient, kept me, I believe, out of vice. What is learned also, at rather an advanced period, is better learned.

"There is, however, one reason for exacting some application from young people, but not in the very tender years, and that is, to prevent them from contracting idle habits. For this reason, the indolent should always be compelled, either to some bodily or mental exertion. Neither am I arguing, that no moral coercion should be used, or that habits of order, obedience, and regularity, should not be enforced. But, indeed, Sir, the modern system, from the confinement of the nursery, where miss or master must not venture abroad, for fear of soiling their frocks, or falling into a ditch; to the confinement of the infant seminary, where they learn many things to be afterwards unlearned, or at least forgotten, is utterly subversive of health and vigour, and is calculated gradually to enervate the hardy British race."

be effected in carrying on the education of children, by means of such arts, which are infinitely preferable to harshness or severity.

With a numerous family, it is necessary to have classes for spelling, writing, arithmetic, geography, &c.; and the giving of little premiums to those who excel, has been found extremely useful. They generally obtain them according to their years; but still, the apprehension of losing a place, and a little premium also, keeps up the diligence of the more elderly; whilst the hope of an accidental higher premium, and of a better place, excites the diligence of the younger.

There is nothing more likely to be attended with beneficial consequences, than the plan of annually drawing up an account of the progress that has been made in the education of children. In such accounts, which ought to be subscribed by the children themselves, a summary ought to be given, of the progress they have made within the period of the year, the books they have read, the masters they have attended, &c.

In regard to schools, I have no doubt that healthy boys ought to be sent to public schools, were it only for the purpose of giving them a knowledge of human nature, and preparing them for those scenes in which they must afterwards take an active part*. As to girls, on the other hand, a private education is better, excepting perhaps for a year or two, previous to their being introduced into life. I have seldom seen a proper foundation laid at schools for girls, in regard to writing, spelling, arithmetic, music, dancing, and other essential accomplishments. At large schools, there are too many, for all, or almost any one, being properly attended to. The foundation should therefore be laid at home, under the eye of an affectionate parent. After that is accomplished, a public school may be of use, for one, or even two years, to complete the education thus founded, to excite emulation, to see more into the character of others, and to shake off a little of the rustic familiarity of family life.

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* A very intelligent correspondent has remarked, that the mode of instruction and discipline now pursued at our public schools is obsolete, and not adapted to the times. The boys are also too numerous; and their morals and health, therefore, cannot be properly taken care of. He considers, therefore, a private school, where there are from 30 to 50 boys, infinitely preferable. I approve of such a school, as preparatory to a larger one; and I am satisfied, that the great public schools might, in various respects, be greatly improved But with all their disadvantages, I think, that a boy, destined for active life, ought to have his classical education completed at them.

10. There still remains that most important of all the branches of education, the improvement of the moral character, and the laying a proper foundation of religious principles.

It cannot be expected that so extensive a subject can be much dwelt upon in a work like the present, more especially as this is a particular, which is very generally attended to, at least in so far as regards the religious tenets of the country where any individual is born. In addition to these, the celebrated Helvetius has recommended a *moral catechism*, and given an example of it, which, in many respects, is drawn up with ability[*]. This hint might be greatly improved upon, and is well entitled to the attention of those who interest themselves in the improvement of the rising generation[†]. The points most particularly to be inculcated on youthful minds, are principally the following: —A strict regard to truth;—Fidelity to promises or engagements; —A horror at the violation of property, without which civilized society could not exist for a moment[†];—Affection for their more immediate connections, since, as Dr. Johnson remarks, relations are ready-made friends;—A warm attachment for the interest of the country where they reside;—And a deep conviction of the existence of a Deity, and the necessity of obeying his commands, as revealed in the Scriptures.

I have thus drawn up a few cursory observations on the subject of education, some of which are the result of the experience of one who has been blessed with a more numerous family than usually falls to the lot of literary men,

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[*] See a Treatise on Man, a posthumous work by Helvetius, translated by Dr. Hooper, in 2 vols. 8vo. printed at London, anno 1777, vol. ii. p. 412.

[†] I would particularly recommend this to the attention of Mr. Lindley Murray, of Doctor Mavor, of Miss Edgeworth, of Madame Genlis, or of some other distinguished author who has written on education; or, let the religious and moral catechisms be combined, leaving out of the former all abstruse doctrines beyond the usual reach of youthful minds.

[‡] Helvetius justly observes, that the preservation of property is the most sacred of all rights. If one could reap the harvest, where another had ploughed the land and sowed the seed, no man would plough or sow, and the whole country would be exposed to the horrors of famine. From the moment that any one can, with impunity, usurp the property of another, mankind return to the state of war all society is dissolved, and men must fly from each other like lions and tygers. Vol. ii. p. 415.

(namely, fifteen children); and he trusts they will furnish hints to others, which they may improve upon, and adapt to the peculiar circumstances in which they are placed.

3. *Professional Occupations.*

It is impossible that any great community could exist, without a great diversity of occupation or employment. Some must devote themselves to the essential purposes of providing food, clothing, and shelter: others will be employed in the magistracy, and in the learned professions, as law, divinity, and medicine; others in defending their country, either by sea or land; others in foreign commerce, or in the manufacture of various articles, calculated for foreign or domestic consumption; and, lastly, others in the various professions connected with the luxury, the pleasures, and refinement of a great empire.

In considering the subject of the various occupations usual in civilized society, more especially as connected with health and longevity, I think that they may, with propriety, be divided into the following classes: 1. The laborious in the country, or husbandmen; 2. The laborious in towns and villages, or the manufacturing class; 3. The laborious under ground, or the mining class; 4. The military class; 5. The seafaring class; 6. The commercial class; 7. The voluptuous in towns; 8. The voluptuous in the country; 9. The sedentary, studious, or learned class; and, lastly, The political class. In one or other of these classes, or in their respective families and dependents, every individual, in a great community, with the exception of the poor, whether settled or vagrant, must be included.

1. Without disparagement to the other classes of society, that of the husbandmen must be accounted the most important and essential, for without their industry in raising food, no political society could possibly be maintained. Their labours, therefore, must be accounted the basis on which the existence and prosperity of every political community must depend; and if, by their exertions, a sufficient quantity of wholesome provisions be raised, a state can hardly fail to prosper.

The situation of the husbandman has been represented as unfavourable to health and longevity. Engaged, it is said, in incessant toils, driven often from the extremity of heat to cold, liable to all the inclemencies of the elements, and exposed to numerous cares and anxieties, arising from variation of seasons, deficiency of markets, and various other casualties, these wear out the best constitutions; and extreme old age, is more to be ascribed, to uncommon strength of stamina, than to fine air and climate, otherwise the effects of these would be more equally or generally felt *. Persons employed in agriculture, however, possess many advantages in point of health: Their labour indeed is constant, but not in general so violent, as either to exhaust the strength by over exertion, or to excite any weakening degree of discharge by perspiration. The variety of employment is also a favourable circumstance; the air they breathe is pure, and in general, uncontaminated by any noxious vapours; the diet is commonly wholesome; the hours they keep are regular; the mind is as much exempted from care and anxiety, as in any other active profession; and they are exposed to fewer temptations to vice than those who live in crowded society †.

2. The manufacturing and labouring classes are the next, in point of importance, to husbandmen; for food itself would be of little avail, without the advantages which their labours produce, in particular, those of clothing and shelter. It is much to be regretted, that amidst the various sorts of manufactures, and of laborious occupations, some of them must be unwholesome; and yet, unless persons were induced to enter into these professions, one half of the pleasures and comforts of life would be lost to the rest of the community. Measures, however, might certainly be thought of, by which this great source of human misery might be considerably diminished. For instance, wherever any machine could be invented, that would answer the purpose of manual labour in any unwholesome profession, the use of such machine ought certainly to be promoted, by private assistance and public encouragement. Laws ought also to be enacted, (such as those with regard to the cotton trade), by which the use of machinery, likely to be, in any great degree, hurtful to the health and constitutions of the manufacturers, ought to be prohibited. It would be extremely

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* Statistical Account of Scotland, Parish of Bothwell, vol. xvi. p. 302.

† See these particulars more fully enlarged upon, in a very ingenious essay on the preservation of the health of persons employed in agriculture, by Dr. Falconer, printed separately, anno 1789, and also published in the 4th volume of the Papers of the Bath Society. It is said, that the profession of a gardener, if accompanied by temperance, is, on the whole, the most healthy of any.

desirable to publish works, pointing out the means of using precautions, by which manufactures, in some degree necessarily unwholesome, may be carried on in a manner less prejudicial than otherwise must be the case. A work of this sort, *on the diseases of artificers*, was published by a respectable author above a century ago, and has since been translated into English; but though we have become the greatest manufacturing nation that ever existed, no work has since been written on the same interesting subject, by any native of this country[*]. Those individuals who lose their health in occupations which are dangerous in themselves, but useful to society, ought to be maintained in their old age, in a comfortable manner, either at the public expence, or to be induced, by means of friendly societies, to secure a proper provision to themselves[†].

It has been much disputed, whether it is most expedient to have manufacturers collected in towns or great villages, or scattered over the country. Whatever may be the case in regard to profit, there can be no doubt, in regard to health, that the latter plan is the most advantageous; and the happy effects which have been exemplified, both in the western parts of Yorkshire, and northern parts of Ireland, must render it desirable, that such a system shoud be more generally extended.

3. The mining class certainly forms a most important and valuable body of the community, without whose aid many branches of manufacture could not be carried on, and many of the comforts of life could not be enjoyed; and fortunately the hazard of explosion in mines, is now prevented, by the recent discoveries of a Davy. There are some mines, as those of lead, which are unwholesome; but there are several instances of old age among miners[‡]; and, when they are put on a proper system, they are as strong

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[*] See Bern. Ramazzini, "*De Morbis Artificum Diatriba.*" Printed at Utrecht, anno 1703; translated by Dr. James into English, and published anno 1746, under the title of, "A Dissertation on Endemial Diseases," by Fred. Hoffman, and a Treatise on the Diseases of Tradesmen, by B. Ramazzini. There are some general observations on the Diseases of Tradesmen, in Valangin on Diet, p. 64, and the Manual of Health, p. 128.

[†] Where a manufacture is highly prejudicial, as that of white lead, (in which a healthy man is destroyed in three years), it would be a good regulation, to employ none but condemned criminals in it, to whom a respite would be mercy.

[‡] As John Taylor, a miner in Leadhills, Scotland, who lived to 132 years of age; and the old miner in Switzerland, whose body was dissected. A particular account of Taylor is given in Smellie's Phil. of Nat. Hist. vol. i. p. 528.

ıs other men. It is well known, that the miners
are remarkable for their strength, the *Cornish*
ong been celebrated; and it appears, from the
bted authority, that the colliers of Alloa in
e as healthy as any description of people can

military class are, in general, strong and healthy,
e cially where they are kept under a proper system
ıe. Indeed, those soldiers who have survived the
s of war are remarkable for long life. They are gene-
.out and vigorous men. They are trained to an erect
ure; they are accustomed to regular hours, and they
nabituated to marching, which familiarizes them to a
ural and healthy exercise, circumstances which all com-
ıe in their favour†.

5. It has generally been supposed, that the life of sea-
ing people was unfavourable to health and longevity;
more accurate investigation has proved the contrary.
e tables communicated from Greenwich Hospital, are
ngly in support of the idea, that the watery element is
unfriendly to the human frame, more especially if at-
ıtion be paid to their health as they advance in years.
nong the out-pensioners of Greenwich Hospital, there
were, in 1802, twenty-three above eighty, and no less a number than ninety-six among the in-pensioners, making, in all, one hundred and three; out of four thousand nine hundred and nine individuals. Nor ought it to be omitted, that by the improvements which have been made in the diet of seamen by the celebrated Cook, the mortality on board of his ship was less, than in the healthiest country that can be mentioned‡.

6. The commercial class, where their strength and spirits are not destroyed by hazardous speculation, have strong claims to health and longevity. Their labour is not oppressive; they have some leisure at command, which they can devote to air and exercise; and, as a merchant of the

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[*] See Statistical Account of Scotland, Parish of Alloa, vol. viii. p. 619. Out of 520 colliers, male and female, anno 1792, 56 were above 55 years of age.

[†] Dr. Jackson's Observations on the Health of the Soldier, are well entitled to particular attention. There are some useful observations on the same subject in the Military Mentor, printed in 2 vols. 8vo. anno 1804, vol. i. letter i p. 6. See also, Xenophon's Instructions for a General of Cavalry, printed in London, anno 1802, 4to.

[‡] Dr Trotter, in his *Medicina Nautica*, explains the means of preserving the health of seamen, with much skill and ability.

city of London once remarked, no other rank of the people know so well in what true comfort consists. In regard to those who deal in retail commerce, they compose a large proportion of that middling class of society, who are so useful to the rest of the community; and as they are in general educated, well informed, and with obliging dispositions; when their business thrives, they are likely to lead comfortable and happy lives.

7. The voluptuous in towns, or those who follow pleasure as their occupation, including those who administer to the luxuries of a wealthy capital, are a numerous class in every wealthy country, but are seldom distinguished for health. Indeed, how can it be expected, that those who think of nothing but sensual enjoyments, and who would sacrifice any thing for the gratification of a moment, can be healthy, or can live long? Without dwelling on the diseases to which they are liable[*], the irregularity of the hours they keep, and their unceasingly running after trifling objects, must be pernicious. They soon get into a weak and irritable state; and their life becomes a burden to themselves and others.

8. The voluptuous in the country, have great advantages over their town rivals, at least in point of health. Their pursuits, however, are not much more important. The exercise they take, though often too violent, hardens their frame, and gives them a robust and manly appearance; but those who, in their youth, have directed their attention almost exclusively to the pleasures of the chase, when they get old, have no resource but one, and in general fly to the bottle, as their only means of consolation: This, if carried to excess, soon terminates their career.

9. Those who direct their attention to study, or are engaged in the learned professions, have seldom reached very great longevity, about 80 years of age being their usual highest standard[†].

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[*] The best work upon this subject is Tissot's Essai sur les Maladies des Gens du Monde. In regard to those who administer to the pleasures of the rich, I examined a singular book, called "The Thespian Dictionary, or "Dramatic Biography," printed in one vol. 8vo. anno 1805, where there are sketches of the lives of the principal dramatists, composers, managers, actors and actresses of the united kingdom, amounting in all to about 700; and, of the whole number, there are only two distinguished by great age, namely, Charles Macklin, a native of Ireland, who lived to above 100, as some affirm; and Cervetto, a musician, probably a native of Italy, who was, it is said 103 years of age. A sufficient proof how few persons of that description are remarkable for longevity.

[†] See the List of Literary Characters who died at a good old age, in the last and the preceding century. Code of Health, 2d edit. vol. ii. Appendix, p. 74.

comforts of life, and the prospects of health and Hence, though persons may repine at their and wish that they were placed in a different si- ose who are in that envied state, are perhaps r a similar change, knowing the disadvantages of situation, and ignorant of the cares and miseries o others. What then remains to be done, but to d with the situation in which we are placed, and be desirous of making it as comfortable and happy as cumstances will admit of.

4. *Marriage.*

It is evident, that the happiness, and consequently the health, of every individual, must greatly depend upon his ntering or not into the married state. Whatever the gay ertine may think, a connubial connexion, when formed ccording to proper principles, certainly yields superior joy, and more exquisite gratifications, than any loose or temporary union can produce. If contrasted, as it sometimes is, with friendship, there can be no comparison; for marriage is sweetened with more delicacy and tenderness, and is confirmed by dearer pledges, than can attend the closest alliance of friendship*. Such, indeed, are the innumerable advantages, both public and private, resulting from the married state, that the most distinguished statesmen have invariably maintained, it ought to be, in a peculiar manner, favoured by the laws, as the best foundation of political strength, and of social happiness†.

The philosophic Buffon observes, that, after puberty, marriage is the proper state of man, and most consonant to his nature and circumstances‡. In youth, says Bacon, wives are our mistresses, companions in middle age, and nurses when we get old, so that a man has always reasons in favour of matrimony§. But the author who has most fully dwelt upon this subject, is Hufeland‖. He considers the marriage state as indispensibly requisite for the moral perfection of mankind. He contends, that it prevents debilitating dissipation on the one hand, and cold and unnatural indifference on the other; that it moderates and regulates enjoyment, whilst it promotes domestic joy, which is the purest, the most uniform, and the least wasting of any; the best suited to physical as well as moral health; and the most likely to preserve the mind in that happy medium, which is the most favourable to longevity. It also lays the foundation, not only for the happiness of the present generation, but for that of the future; since it is the matrimonial union alone, that produces to the state, well educated citizens, accustomed from their youth to regularity, and an observance of the duties they have to perform.

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* See Fielding's Joseph Andrews, chap. iv.

† Such was the respect paid to marriage at Athens, that all commanders, orators, and persons intrusted with any matter of public confidence, were obliged to be married men. The Roman laws against celibacy, during the Augustan age, were peculiarly severe.

‡ Vol. ii. p, 422.

§ See Bacon's Works, vol. iii. p. 309, Essay VIII.—Of Marriage and Single Life.

‖ He represents a bachelor as a mere egotist, restless and unsteady; a

It is singular, also, that by far the greatest proportion of those who have attained great age were married; and though sailors and soldiers have no particular inducement to enter into the connubial state, yet, out of a hundred and twenty-seven aged people, who are pensioners in the Hospitals of Greenwich and Kilmainham, there were only thirteen bachelors; the remaining one hundred and fourteen had been married men. Few monks, it has been remarked, get old; and few nuns reach any length of years*.

Marriages, however, are not to be indiscriminately approved of. To make them answer the purposes of health, and the other objects to be kept in view in the connubial state, there ought to be a parity of station, a similarity of temper, and no material disproportion in point of age. It is owing to the want of some of these most essential requisites, that the married state proves so often the source of misery, instead of joy or comfort.

5. *Amusements.*

In early ages of society, mankind are so completely occupied in providing themselves with the necessaries of life, that they have no leisure to attend to matters of mere amusement. But, in process of time, when anxiety regarding the immediate means of subsistence is no longer felt, many individuals are at a loss how to occupy themselves; hence, a variety of pastimes† have been invented,

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prey to selfish humours and passions; and less interested for mankind and for his country, than for himself. But to this description there are many exceptions.

* Code of Health, 2d edition, vol. ii. Appendix, p. 219.

† Derived from "*pass the time.*"

hose irksome hours to which they would other- ble. Such amusements are either of a public or : nature. In a general point of view, they are of a mode of spending time *with innocence*, where sement is alone attended to. 2. As a means by tone of the mind, exhausted by severe mental y be restored. 3. As being incidentally attended commercial and agricultural advantages. 4. As a ome cases, of diffusing knowledge, and in others, ing morality; and, 5. As furnishing occupation to [illegible]s of individuals, who, in a populous country, might otherwise find it difficult to procure the means of subsistence. How far they are conducive *to health*, or may be rendered so, is the subject of this section*.

I. *Public Amusements*.

The public amusements which it is proposed here to touch upon, are, 1. Rural Festivals; 2. Public Games; 3. Public Lectures; and, 4. Theatrical Representations.

1. *Rural Festivals*.—These are by far the most useful and the most innocent of all public amusements. Sometimes, under the name of *Fairs*†, they are periodically held for commercial purposes, but with a mixture of rural festivity. Of late, rural festivals, however, have answered more important purposes. They have been rendered the medium of diffusing information of a most valuable description; of encouraging improvements in agriculture‡; and in remote parts of the country, they induce the principal families in the district and its neighbourhood, to assemble together, by means of which relations meet and renew their intimacy, and friendships are formed and confirmed. Where such events take place, the period of these meetings is looked forward to with pleasure, and amidst the innocent

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* It may be proper to add, that several amusements of an active nature, more immediately connected with health, have been already discussed under the head of Exercise See Part I. Chap. V.

† Evidently derived from the Latin *feriæ*. They were originally religious festivals, instituted in honour of the saints: but advantage was taken of the concourses of people thus assembled, to promote the objects both of pleasure and of commerce.

‡ Thus, in regard to ploughing-matches, it has been remarked, that in the same county, (that of Stirling in Scotland), where ploughing-matches are unknown, the operation is generally performed in a slovenly manner; whereas, within the bounds of the Gargunnock Club, by whom ploughing-matches are encouraged, the form of the ridges, and the manner in which the furrow is turned, furnish a model of perfection.—*General Report of Scotland*, vol. iii. p. 421.

gratifications of social intercourse, the interests of agriculture, and the improvement of the country, are promoted*.

Among rural festivals, horse-races may be included, though they have in many cases become an object of speculation, and a source of plunder, rather than of amusement; yet, when they are restricted to the real object for which they were instituted, that of improving the speed, and perfecting the form, of the noblest of our domestic animals, they cannot well be objected to, furnishing a species of amusement accompanied by utility.

2. *Public Games and Tournaments.*—The Olympic Games, as exhibited to assembled Greece, were undoubtedly the most splendid of all public amusements; and they materially contributed to that elevation of mind, and splendour of genius, by which the Grecians were distinguished.

The tournaments in the days of chivalry, were likewise extraordinary public exhibitions, which are without a rival in those modern times, though they bear no comparison, in point of variety, to the games of Olympia, being restricted to martial sports. An occasional attendance on such scenes, if properly conducted, could not be unfavourable to health.

3. *Public Lectures.*—There is no amusement which seems to be more innocent, and at the same time more rational, than that of attending such public lectures, as are calculated for the diffusion of useful knowledge, not as branches of education, but for the instruction of those, who, though advanced in life, have not had the means of acquiring a knowledge of various arts and sciences, as chemistry, the principles of mechanics, &c. which are of such advantage to the human species. There surely cannot be a more unexceptionable mode of spending a leisure hour, than in listening to the ingenious discourses of those, who explain to a numerous and intelligent audience, some important

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* General Report of Scotland, vol. iii. p. 429. Perhaps the first sheep-shearing festival held near the Queensferry in Mid-Lothian, on the 1st of July, 1794, by the Society for the Improvement of British Wool, is one of the best ever held. The ladies were all dressed in white muslins, with flowers, and various coloured ribbons; and each bore a shepherdess's crook, decorated with taste and fancy. A frigate at anchor, at no great distance, fired a round of twenty-one guns, when His Majesty's health was given. The *amor patriæ* glowed so much in every breast, that no assembly ever exhibited more harmony and happiness than appeared on that occasion. See Mid-Lothian Report, Appendix, p. 32.

branch of knowledge, accompanied by useful experiments where they are necessary.

4. *Theatrical Representations.*—The advantage of theatrical representations has been much disputed. By some, they are considered to be a useful means of inculcating the principles of morality. By others, they are condemned, as the source of infinite mischief. It must be admitted that they seldom do much good; but if they do no harm, it is ground sufficient for the government of a country to encourage and protect them; more especially in great towns, where the people must be amused and occupied, otherwise they are apt to engage in plots, and conspiracies, to overthrow the Government. In regard to the preservation of health,—attending theatrical representations, is certainly unfavourable to that great object. The going to the theatre, and returning from it, is generally attended with difficulty, and exposure to cold; and the air that is breathed in a crowded playhouse, where a great number of lights are likewise burning, cannot be wholesome.

II. *Private Amusements.*

These are,—1. Music; 2. Dancing; 3. Drawing; 4. Chess; 5. Cards; 6. Games of Chance; 7. Conversation; and, 8. Reading.

1. *Music.*—Music is a valuable accomplishment, and a competent skill in it, is, on many occasions, of considerable moment. It agreeably supplies a want of society, which cannot always be commanded; it is the means of introduction to many respectable and valuable acquaintances. Few people dislike music; and the individual who bestows his leisure hours on that innocent amusement, whilst he pleases himself, if he likewise entertains others, his labour will be amply repaid. Music will also divert him from the gaming-table, and various irregularities, in which he might otherwise have been tempted to indulge.

2. *Dancing.*—Under proper limitations, dancing is a proper amusement, especially in winter, when the heavy atmosphere, much rest, and much sitting, render the blood thick, and dispose persons to melancholy. Moderate dancing has every advantage of a gentle exercise, besides the beneficial effects produced on the mind, by cheerful company, and music. But when carried to excess, or when performed in heated rooms, and under a confined and vitiated atmos-

phere, it is frequently attended with pernicious consequences, occasioning spitting of blood, consumption of the lungs, and inflammatory disorders. After dancing, cooling drinks, and above all, ice, as well as exposure to a draught of air, ought to be particularly avoided*.

3. *Drawing.*—The art of drawing, is one of the most necessary, as well as one of the politest accomplishments, that a young person of either sex can possess, and furnishes an agreeable source of occupation and amusement. To travellers it is particularly useful, enabling them to give any celebrated landscape, any peculiar dresses, or remarkable characters, &c. they meet with, by which their minutes must be greatly embellished. But the power of drawing scientifically, complicated machines, engines, &c. with accuracy, and in different views, is by far the most important; and cannot be too strongly recommended to the attention of those, who wish to benefit their own country by visiting others.

4. *Chess.*—A knowledge of chess was formerly considered to be so important an accomplishment, that it generally made a part of the education of a gentleman. It is now less general, and games of easier play, and a lighter description, as backgammon and draughts, being sooner acquired, are more common, and better calculated for mere amusement; for chess requires much reflection, and composure.

5. *Cards.*—These have long been the chief instrument of gaming, both for profit and amusement. They were invented towards the conclusion of the eleventh century, by Jaquemen Gringonneur, a painter in Paris, for the amusement of that unhappy prince, Charles VI., in his lucid intervals. They were soon imported into England, and, for the benefit of the makers of cards in London, an act of parliament was passed anno 1463, (3d Edward IV., c. 4), prohibiting the importation of playing-cards. The progress of card-playing was, at first, slow, but it has since become sufficiently rapid and extensive, to the ruin of numbers of unfortunate gamesters, and to the loss of many others, who spend too much of their time in that infatuating amusement†. The thought which cards require, and the anxiety

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* Willich on Diet and Regimen, p. 450. The late hours are the most pernicious part of the modern system. Formerly, (as has been well observed by an intelligent friend), balls used to begin at six, and to end at eleven. Now, on the contrary, they begin at eleven, and end at six.

† Henry's History of Great Britain, vol. v. p. 566.

they occasion, when any considerable sum is at stake, are evidently injurious to health.

6. *Games of Chance.*—A violent passion for games of chance is attended with much mischief, both to the gamesters themselves, and to society. To the gamesters, by dissipating their fortunes,—by consuming their most precious hours,—by injuring their health,—and by making them neglect their most important duties. To society, by depriving it of the advantages it might have derived from a better application of the time and talents of many of its members*. They have likewise been the means of introducing, among the lower orders, idleness, theft, and debauchery; and among the higher have occasioned, the sudden desolation and ruin of ancient and respectable families, and an abandoned prostitution of every principle of honour and virtue, which has too often ended in suicide. Laws have in vain been enacted to prevent, or to punish this pernicious vice, or at least to place so dangerous a passion under some restraint.

7. *Conversation.*—Instead of cards, or games of chance, why should not meetings be held, expressly for the purpose of rational conversation? On this subject, Dr. Beddoes has justly observed, that the object for which people are to be assembled and held together, might be, to discuss the objects of nature, the processes of art, or some important branch of polite literature. These meetings might be rendered more interesting, by the introduction of boys and girls at the age when they begin to use their reason. The active and the best informed, must provide entertainment for the circle, but the most passive part of the company, would soon forget their listlessness; and in a zeal for obtaining useful information, would find a new pleasure in existence. By the exclusion of the petty malignant topics of common conversation, a better spirit, and more happy disposition would be created. It would be worthy the pen of our ablest author of fictitious biography, to describe the probable effects of such a system of communication among families, (*gradually* substituted for the present), upon health, temper, and morals. The state of society, as it existed in Geneva, before the troubles in Europe, would afford many traits for this interesting picture†. Those who addict themselves to card-playing, or to games of chance, soon become

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* Henry's History of Great Britain, vol. iii. p. 599.

† Hygeia, or Essays Moral and Medical, vol. ii. Essay 8, p. 49.

unfit for any other species of amusement. So fatal a propensity ought to be checked in the commencement, and the best means certainly is, that of conversation in society, or that of reading in private.

8. *Reading.*—But of all the sources of amusement, reading is unquestionably the most valuable. There will be found, not as in conversation, the hasty effusions of the moment, but reflexions deeply considered, and stated with clearness and perspicuity. The anxious inquirer, when he reads, sits down to converse with all the most distinguished characters, that ancient or modern times have produced. No species of mental labour can be thought of, in which he will not find an instructor and a guide. His mind may be enriched by all the treasures that ages have produced. He may indulge himself, on the one hand, with the pleasantries of Le Sage, of Smollet, of Fielding, or of Cervantes; or, on the other, he may probe into the depths of the science of morals, for his direction in this world, or may arouse his hopes of a future state of happiness, by the doctrines of religion.

On the whole, innocent and rational amusements are certainly to be recommended. They deceive the cares, sweeten the toils, and smooth the ruggedness of life. It is impossible for man, without injury to his health, to be constantly employed either in mental, or in personal exertions, and that relaxation of mind which amusements furnish, is found to be highly favourable to health. In regard to the aged in particular, Dr. Cheyne remarks, that nothing more effectually contributes to the felicity of a green old age, than innocent and entertaining amusements, engaging and light studies, and rational diversions, in a cheerful and affectionate society*.

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* Cheyne on the Method of Cure in Diseases of the Body and Mind, p. 308. The celebrated Dr. Seed ably remarks, in his sermon, entitled, "The Case of Diversions stated," vol. i. Sermon 8, "That it is impossible to suppose that the Deity, would abridge us of any pleasure, merely as such, when it does not interfere with higher and nobler delights. Such a notion is highly derogatory to his goodness, who, in forming the world, seems, in some things, to have consulted our pleasure only, without any other apparent view.

CONCLUDING REMARKS

ON THE WORK IN GENERAL;

Explaining the Advantages to be derived, from Arranging and Condensing the Knowledge already accumulated, regarding the most important Arts and Sciences, as exemplified in the Code of Health and Longevity.

DURING successive ages, many volumes have been written regarding various arts and sciences, the most essential for the comfortable existence of the human race; and great additions have been made, from time to time, to the knowledge thus collected; but these additions are scattered throughout so many works, and published in such a variety of languages, that it would require many years of intense application, to become thoroughly master of all the facts and observations which have been already accumulated, not only regarding any entire art or science, but also with respect to its more important branches or subdivisions; many of which, (for instance, those of medicine), are so intimately connected together, that even the complete knowledge of any one of them, ought not to be considered as sufficient, without some general acquaintance with the rest.

It has often occurred to me, that a plan might be formed, by which human knowledge, regarding at least some particular arts or sciences, might be so distinctly arranged, and condensed within so narrow a compass, as to diminish the necessity of perusing the innumerable volumes now extant on the same subject[*], and by which men in general might be better informed, and consequently would be better enabled to enjoy the pleasures of their existence, than they are at present. The system which seems to me best calculated for that purpose, I shall endeavour briefly to explain.

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[*] The necessity of condensing human knowledge is becoming every day more apparent. We are told, that there are about 350,000 printed volumes in the National Library of Paris, besides from 70 to 80,000 manuscripts. See Pinkerton's Recollections of Paris, vol. i. p. 50.—As there must be a number of works, in other languages, not in that library, the total number of volumes now in print, cannot be much short of 500,000; many thousand of which must contain some valuable information. There surely cannot be a stronger argument in favour of condensing human knowledge as much as it is practicable. Such immense masses of printed paper, can answer no good purpose, and are a heavy load upon literature, and the acquisition of useful knowledge.

Let any art or science be fixed upon, for example, *Physic*. Let it be divided into several branches, as, 1. *Anatomy*, or the construction of the human body; 2. *Physiology*, or a knowledge of the functions which its various parts perform when in health; 3. *Pathology*, or the doctrine of the alterations which its structure and functions undergo when in a state of disease; 4. *Practical Medicine*, or the art of curing its diseases by internal remedies; 5. *Surgery*, or the art of remedying disorders or accidents by external application; and, 6. *Hygiene*, or the art of preserving it in health.

Let us suppose, after this or any other division is adopted, that an intelligent person is employed, to draw up an analysis of any branch of the proposed subject; let that analysis be translated, either at the expence of the Government, or of a society established for that purpose, into all the principal languages of Europe; and let premiums be given to those, who shall transmit the most valuable communications upon, or will point out the most essential improvements in, the volume to be thus circulated.

Let a collection be made of the most celebrated works, whether ancient or modern, that have been written, either directly or indirectly, regarding the points in question; let these works be thoroughly examined by intelligent men; and let every valuable fact or observation they contain, be extracted out of them.

The whole mass of materials being thus collected, let an able person be appointed, with a committee of assistants, to digest the whole; and thus a work will be formed, capable, undoubtedly, of improvement, by future observation and new discoveries, but which would contain all the material information *hitherto accumulated*. It might thence be accounted A CODE or standard, for a knowledge of that subject, in all time coming, and to which all future publications regarding it must necessarily refer.

Unless some such mode, of arranging and condensing human knowledge, be devised and carried into effect, the world would be overwhelmed with a load of literature, without deriving that advantage from it, which might otherwise be obtained.

INDEED, IN ITS PRESENT STATE, KNOWLEDGE MAY BE COMPARED TO A SMALL PORTION OF GOLD, DISPERSED THROUGHOUT A GREAT QUANTITY OF ORE. IN ITS RUDE CONDITION, THE STRONGEST MAN CANNOT BEAR ITS WEIGHT,

OR CONVEY IT TO A DISTANCE; BUT WHEN THE PURE METAL IS SEPARATED FROM THE DROSS, EVEN A CHILD MAY CARRY IT WITHOUT DIFFICULTY.

As the preservation of health, is one of the most important subjects, to which the attention of mankind can possibly be directed, why not begin with that branch of inquiry? The present volume contains an abstract or analysis of the principal facts and observations regarding the preservation of health hitherto known; yet many errors must necessarily have been fallen into, and many important particulars omitted. The circulation of this work, however, not only at home, but in foreign countries, might lead to the correction of all these errors, and be the means of collecting all the additional information essential for the purpose. Would it not be creditable for any country to have the experiment tried? The expence would not be considerable, whereas the advantages resulting from it would be of inestimable value: And if once such a plan succeeded regarding one particular point, the same system might be transferred to another, until every branch of knowledge, likely to promote the comfort and happiness of human nature, was brought within a small compass, and rendered easily accessible.

Were such a measure once completed, *and a perfect specimen produced*, the consequent advantages would appear in such glowing colours, that, by the universal concurrence of every enlightened mind, new undertakings of a similar nature would speedily be engaged in, and would be carried on with such zeal and spirit, that no doubts could be entertained of their final accomplishment.

CODE
OF
HEALTH AND LONGEVITY.

APPENDIX.

No. I. *On the Structure of the Body of Man.*

WHEN the form of man is first seen, the beauty and symmetry of its outward or external shape, must naturally strike every intelligent beholder[*]: But when it is examined internally, its structure appears still more astonishing.

It is to anatomy that we are indebted for the intimate knowledge we have acquired of this wonderful fabric. But as to many of our readers, the terms which anatomists make use of cannot be very generally intelligible, we shall endeavour to explain, in more popular language, the result of their researches.

Man may be defined, "a being, in whom reason or spirit, and
" body and matter are united, and whose existence depends upon
" that union; for the individual who loses his reason, unless pre-
" served by the care of others from destruction, would soon pe-
" rish[†]."

As without the possession and the exercise of reason, man could not exist for any space of time, it is necessary that the mind, and the reasoning and other faculties connected therewith, should be furnished with a proper place of residence; accordingly, she is provided with the brain, where she dwells as governor or superintendant of the whole fabric[*].

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[*] Milton has most beautifully described the appearance of man, as it would strike any being who first saw it.

> " Godlike erect, with native honour clad,
> " With wisdom, sanctitude severe and pure;
> " For contemplation, and for valour form'd,
> " His fair large front, and eye sublime, declar'd
> " Absolute rule." *Paradise Lost*, b. iv.

[†] In the Philosophical Transactions, vol. xxvi. p. 170, an account is given of an idiot, who swallowed several brass and iron instruments, which were found in his stomach, when he was opened. Hence it would appear that, without reason, man could not distinguish what was fit to be eaten.

As the mind must hold a correspondence with all the material beings which surround her, she must be supplied with organs fitted to receive the different kinds of impressions which they will make. With these, or *the organs of sense* as we call them, she is provided; the eye is adapted to light; the ear to sound; the nose to smell; the mouth to taste; and the skin to touch[†].

Not only are these organs of sense necessary, but it is also essential to have *organs of communication*, to give information to the mind of all the impressions made upon the senses, and fitted, at the same time, to convey her commands over the whole frame. For these purposes, the nerves were actually given. They are chords which arise from the brain, the immediate residence of the mind, and disperse themselves in branches throughout all parts of the body. They convey all the different kinds of sensations to the mind, in the brain, and likewise carry out, from thence, all the commands, or the impressions she wishes to give to the different parts of the body.

The human frame, however, could scarcely be said to exist, unless endued with the power of moving from place to place, for the purpose of being enabled, not only to hold an intercourse with a variety of objects, but also to fly from such as are disagreeable, dangerous, or hurtful, and to pursue such as are pleasant or useful. This is obtained by means of the limbs, the muscles, and tendons, the instruments of motion, which are found in every part of the fabric, where motion is necessary.

But to support, and to give firmness and shape to the fabric, to keep the softer parts in their proper places, to give fixed points for, and proper direction to, its motions, as well as to protect some of the more important and tender organs, from external injuries, there must be *some firm prop work* interwoven throughout the whole; and, in fact, for such purposes the bones are intended.

The prop work must not be made into one rigid fabric, for that would prevent motion; hence the advantage of having a number of bones firmly bound together by the ligaments, to prevent their dislocation; and the extremities of these bony pieces, where they move and rub upon one another, must have smooth and slippery surfaces, for easy motion, which nature has happily provided for, by what are called the cartilages of the joints, and the synovia, or joint oil.

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[*] The following description of the structure of the human body, is principally taken from Dr. Hunter's introductory letters to his last course of anatomical lectures, printed anno 1784.—See also Mead's Medical Works, p. 352.

[†] It is a circumstance well entitled to be observed, that the two most important of our senses, namely, the sight and the hearing, have double organs by which their sensations are communicated to the mind. By this admirable provision, we are enabled to see or to hear every where around us, and the animal is in some measure prepared for the misfortune of the loss of one of these noble and necessary organs of the body.—See Derham's Physico-Theology, vol. i. p. 147.

There must also be an outward covering over the whole apparatus, both to give it a firm compactness, and to defend it from a thousand injuries. These are the purposes of the skin.

As this body is intended for society and intercourse with other beings, more especially of the same species, it is necessary that it shall be endued with the means of expressing and communicating its thoughts, by sensible marks or signs. For this purpose, it is provided with the organs and faculty of speech, by which it can throw out signs with amazing facility, and vary them without end.

Such a being, however, as is above described, would soon perish, unless provision were made for its duration; and not only for repairing the injuries it may commit upon itself, but also those to which it must be exposed from others. A treasure of blood is therefore actually provided, full of nutritious and healing particles, and capable of being converted into bone, into muscle, into nerve, into gland, and, in short, into every other part of the body. Impelled by the heart, and conveyed by the arteries, it repairs the various parts of the human frame, which are in a perpetual state of decay; whilst, by other vessels, called absorbents, the digested food is conveyed from the bowels into the mass of circulating blood, and any noxious or useless matter is carried off from the body.

To prevent this treasure from being lost, unless in so far as is necessary for repairing the damages of the machine, the blood is kept in perpetual circulation, so as to return to the heart, whence it is again propelled for the purposes of fresh reparation. In the course of its being thus circulated, also, whatever is redundant, useless, or noxious, in the mass of blood, is separated from it, and thrown out of the system.

But, as this store of blood would soon be exhausted, and the human machine would of course perish, it is necessary that provision should be made for fresh supplies. This is most effectually done in the following manner: A variety of articles, belonging to the animal or vegetable kingdoms, are scattered around. The frame is provided with hands, the fittest instruments that could be contrived, for seizing and gathering them, and for preparing them in various ways to be consumed. These articles, which we call food, must first be conveyed to the stomach, and then converted into blood. To prepare them for the stomach, it is provided with teeth for cutting and bruising the food, and a juice, at all times prepared in the mouth, which mixing with the food, it is thereby reduced to pulp, and is afterwards changed in the stomach, (partly by the action of that organ itself, and partly by a juice secreted in it), into two parts, one resembling milk, which is nutritious, and is conveyed by the lacteals to repair the waste of the blood; and the other into matter, which on undergoing a farther change, by the admixture of gall, becomes excrementitious.

For various important purposes in life, also, it is endued with organs of respiration, by means of which, the blood undergoes changes of colour, and is deprived of noxious matter, whilst it acquires matter that is useful; and that vital warmth is kept up, without which no animal could exist.

Thus the animal is furnished with every article necessary for its immediate existence, and also with the means of prolonging its duration. But as all animals, after being nourished and reared up to their full strength and utmost perfection, must, in process of time, begin to decay, and must ultimately perish, the means of renovation are necessary, and this is provided by the creation of animals of different sexes, by whom the species can be multiplied without end.

If we compare the animal above described with any machine in which human art has exerted its utmost skill, for instance, the best constructed watch that ever was made, we shall soon be convinced, beyond the possibility of doubt, that there is a degree of intelligence and power in the formation of that animal, far surpassing what man is capable to execute.

The powers which it possesses, mock all human invention or imitation, and are characteristics of a much superior artist.

From the above imperfect sketch of the structure of the human frame, it is not to be wondered at, that the existence of so complicated a machine should be of short duration, more especially as it is not only exposed to internal decay*, but also every moment liable to a variety of external injuries.

Indeed when we examine the nature of the frame itself, more especially in the decline of life, we must be sensible, that the causes of our dissolution are inevitable, and that it is equally impossible to prevent the fatal period of death, as to change the established laws of nature†. In proportion as we become older, the bones, the cartilages, the membranes, the flesh, the skin, and every fibre of the body, become more solid, hard, and dry. Every part shrinks and contracts; and every movement is performed with slowness and difficulty. The circulation of the fluids is sluggish and interrupted; perspiration is diminished; the secretions change; digestion becomes slow and laborious; the nutritious juices are less abundant, and, being rejected by parts which are already too dense, they communicate no supplies. These parts, therefore, may be regarded as already dead, because they have ceased to receive nourishment. Thus, the body dies by degrees; its motions gradually decay; life wears away by almost imperceptible steps; and death is only the last term in the series *.

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* The ingenious Dr. Waterhouse, of Cambridge, in New England, in a letter to the author, on the subjects of Health and Longevity, makes the following judicious observations on the decay of the human frame.

"There are certain periods of life, if I mistake not, which are scarcely noticed by medical writers, viz. about the age of 36, when the lean man becomes fatter, and the fat man leaner. Another between the years of 43-4 and 50, when his appetite fails, his complexion fades, and when his tongue is apt to be furred on the least exertion of body or mind. At this period, his muscles become flabby, his joints weak, his spirits droop, and his sleep is imperfect and unrefreshing. After suffering under these complaints, a year, or perhaps two, he starts afresh with renewed vigour, and goes on to 61 or 62, when a similar change takes place, but with aggravated symptoms. During the natural change that takes place between 43 and 50, no particular organ suffers, but a gradual and uniform *deterioration* supervenes. At this time he first experiences a reluctancy to stoop; he prefers a carriage to riding on horseback, and he finds himself more affected by changes of the weather. He, nevertheless, commonly passes through this kind of "*moulting*," and regains his health, with a little diminution of muscular strength, until he turns *sixty:* then the gravity of age is more strongly marked, and he begins to boast of his age and its prerogatives. This is the result of my observations on others, compared with my own personal experience, which goes no further than your own, being born in the same year, viz. 1754."

† Buffon, vol. ii. p. 477. See also Dr. Hillary's Inquiry into the Means of improving Medical Knowledge. *Code of Health*, vol. ii. p. 4.—The celebrated Boerhaave inculcates the same doctrine in strong terms: "Corpus bene sanum,

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“ per actiones a vita sana inseparabilis sensim ita mutatur, ut tandem mors “ senilis occidat inevitabilis.”—*Inst. Med.* Sect. 1053.

* This last sentence, from Buffon, seems to be taken from Cicero de Senectute. “ Ita sensim sine sensu ætas senescit, nec subito frangitur, sed diuturni- “ tate extinguitur.” The celebrated Dr. Mead concurs in these doctrines. He observes, that his health consists in a regular motion of the fluids, together with a proper state of the solids, and diseases are their aberrations, which, as they are numberless, and one often produces another, it is next to a miracle, that the animal body should be able to hold out to extreme old age. But a body such as ours, cannot possibly retain life for ever, because the membranous fibres of the blood vessels, which were made elastic, in order to drive their included juices forward, become gradually harder, and at length rigid, whence they are rendered incapable of executing their offices, and the secretions of the several parts are diminished by degrees. And that the useless juices are not sufficiently carried off by perspiration in old age, (a business very material to the continuance of life), manifestly appears from dissections of the bodies of very old people, the insides of their arteries being sometimes found ossified here and there, whereby they had almost entirely lost their springiness, and the orifices of the natural ducts are often observed to be quite cartilaginous.—See Mead on the Human Body, p. 346.

Lord Bacon thus explains his ideas regarding the necessary decay of the human frame.—The spirits, blood, flesh, and fat, are easily repaired after the decline of years, but the drier and more porous parts, as the membranes, all the tunicles, the sinews, arteries, veins, bones, cartilages, most of the bowels, in a word, *almost all the organical parts*, are hardly reparable; and to their loss, and ceasing to perform any longer their proper functions, the whole tends to dissolution.

Nothing, therefore, is more absurd, than the idea that the human frame can be preserved for ever, or even for a much longer period than at present. All specific remedies, as tinctures of gold, vital elixirs, balms of life, and other quackeries of the same sort, are ridiculous. If life can be prolonged, it can only arise from the natural advantages which any individual possesses; or from his following those rules which experience have sanctioned, as the most conducive to health.

It is the more necessary to impress these ideas on the mind of the reader, as not only quacks, like Paracelsus, but even distinguished philosophers, like Descartes, have imagined it possible to prolong life very considerably beyond the common period. Indeed Descartes declared, “ *That, though he could not venture to* “ *promise to render a man immortal, yet he was sure it was possible to lengthen out his life* “ *to the period of the patriarchs.*” He died, however, at the age of 54. See Bayle's Dict. *voce* Cartes (Rene Des.

Not only have we less personal enjoyment ourselves, but we become a burden upon our friends. We are unable to provide for our own subsistence, and others must labour for that purpose. We become fretful and impatient; and the mind often becomes more distorted that the body.

Nor is this all. If we live to a great age, all the friends of our youth have probably gone before us, and we are unwilling, or unable, to form new connections. The manners, the ideas, perhaps the very language of our youth, have undergone material alterations, and we are disinclined to go with the tide*. In short, we become solitary, singular, and burdensome beings, in the midst of a crowd, bustling about other matters, and indifferent about our complaints. Is it then wonderful, that, when an old woman (Mary Campbell) was asked, at the desire of the author of this work, whether she wished to live any longer, her answer should be, "*Not a moment.*"†

The best consolation certainly is, when a person can review a long and well spent life, and can part with it without reluctance, in the hope of enjoying, in another and a better world, those scenes of happiness, which could not be expected in this imperfect state of existence.

No. III. *Circumstances connected with the Person of the Individual, favourable or adverse to Health and Longevity.*

THE circumstances connected with *the person* of the individual, having a material tendency to promote health and longevity, and which, at the same time, are almost totally independent of any care or exertion on his part, are,—1. Parentage. 2. Perfect birth. 3. Gradual growth. 4. Natural constitution. 5. Form. 6. Sex; and, 7. The efforts of nature to renew the distinctions of youth.

Each of these particulars it will be proper separately to consider.

1. *Parentage.*—There is no circumstance which seems more to indicate health and probable longevity to any individual, than his being descended from healthy and long-lived ancestors‡. It is well

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* Alexander (Jerome), a cardinal, made his own epitaph, which shews that he was not displeased with his destiny. It consists of two Greek verses, which signify that he died willingly, because he ceased to be witness of several things, the sight of which was more insupportable than death. Such would be the disposition of all men, if reflection, if reason, if good sense, were capable of surmounting the mechanical impressions that made us in love with life. See Bayle's Dict. *voce* Alexander (Jerome.) Buchanan also expressed himself tired of life before he quitted it.

† The Author has collected several instances of great longevity in Scotland, the particulars of which will be printed in the Code of Longevity, vol ii. The state to which some of these individuals were reduced, makes the idea of a prolonged state of existence an object not very desirable.

‡ This doctrine, says Camper, is of great antiquity: for both Hippocrates and Pliny have remarked, that though there are some exceptions, owing to the child suffering in the womb of the mother, yet it is a general rule, that healthy parents will have healthy children.

known, that children have a predisposition to suffer from the maladies of their parents[*]; and, on the same principle, they are well entitled to enjoy the perfections of those to whom they owe their birth. Indeed, in the course of all the numerous inquiries which we have made regarding this branch of the subject, it frequently appears, though the rule is far from being universal, that wherever any individual was distinguished for longevity, his progenitors, either on the paternal or maternal side, enjoyed a similar duration or length of life.

Let it not be supposed, however, that having aged parents is an infallible criterion of long life. We see every day, how much, in this respect, persons even in the same family differ from each other; and how often the brothers and sisters of those, who have lived beyond a century, have died, some in infancy, some at manhood, and some at the other periods of life.

Indeed, the result of the most extensive and particular inquiry that has hitherto been made regarding old people, namely, the reports transmitted to the author from Greenwich and Kilmainham hospitals, and from the workhouses in London and the neighbourhood, proves to what extent the rule may be justly carried[†]. The number of individuals, beyond 80, contained in these reports, amounts to no less a number than 598, of these 303 affirmed that they were descended from long-lived ancestors, but the remaining 295 either could not give any account of that important circumstance at all, or declared, that there was nothing remarkable in regard to the longevity of their ancestors. Though having aged parents, therefore, may give a predisposition to a lengthened duration of life, yet a variety of other circumstances, more especially diseased persons should be prohibited to marry, as likely to produce nothing but disease, deformity, and political mischief*. This, however, would be going much too far. Yet nothing surely can be better founded, than strongly to recommend to those who are likely to inherit any family disease, to be peculiarly circumspect in their manner of living, and to guard against its attacks, at least at an early period of their lives, by attention to air, to exercise, and to diet. It is certain, that family diseases have often, by proper care, been kept off for one generation†; and there is some reason to believe, that by persisting in the same course, and forming judicious connubial connections, such diseases might at length be wholly eradicated; and that a family constitution may be found as capable of improvement as a family estate‡.

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[*] I am assured, by a very intelligent *accoucheur*, that diseases are often communicated from the parents, which destroy the embryo *in utero*, or prove fatal soon after birth. The most obvious proof of this kind, is the venereal infection being transmitted from the father to the fœtus, although in such a latent state in him, as neither to affect his own health, nor to produce disease in the mother of the child.

There is no doubt, he observes, that parents communicate to their children a predisposition to certain diseases. Many suppose, that this hereditary predisposition may be obliterated by suitable measures, but the proofs of this are not yet quite satisfactory. Whatever promotes the general health of the individual, must tend to remove any weakness or facility of derangement, depending on original corporeal structure, and perhaps nothing else can be done. Before experiments on this subject could afford any satisfactory evidence, they must be varied, and so multiplied, that, perhaps, no single individual could complete them. He adds, "I have some such experiments at present going forward, but " even although the result proves such as I hope, I could not rely implicitly on " them as deciding the question."

Doctor Brown, who rejects the idea of hereditary taints, yet seems to admit that a certain *texture of stamina* is favourable to certain forms of diseases. Brown's Works, vol. iii. p. 255. There can be little doubt that chronical diseases depend much upon the original conformation, or rather mal-conformation of certain parts or organs; and that the son should resemble his parent in these respects, is as natural as that he should have similar features.

[†] See Code of Longevity, vol. ii. Appendix. Nos. 7, 8.

2. *Perfect Birth.*—It is well known, that nine calendar months are the proper period, during which the fœtus ought to remain in the womb of the mother§; and such is the beautiful arrangement which nature has made for its protection and nourishment, that should it be sooner expelled, in consequence of any accidental circumstance, no possible care or attention, after birth, can well compensate for the advantages of which it has thus been deprived‖; though great care, or the circumstance of having healthy parents, will go far in remedying even this heavy misfortune.

There was formerly an idea, that children of eight months growth seldom, if ever, throve; whilst those of seven months might¶.

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[*] See Hufeland, vol. ii. p. 128, and Domestic Medicine, p. 8.

[†] A respectable physician (Dr. Wright) informs me, that the *Lepra Græcorum* will sometimes pass over one generation, but will assuredly break out the next.

[‡] Buchan's Domestic Medicine, 18th edition, p. 8. In another part of his work, that intelligent author justly remarks, that the unhealthiness of parents must be a great source of the diseases of their children; and that it would be as reasonable to expect a rich crop from a barren soil, as that strong and healthy children, without great care from their birth till they reach maturity, should be born of parents whose constitutions have been worn out with intemperance or disease.

A delicate female, brought up within doors, and an utter stranger to exercise and open air, who lives on tea and other slops, may bring a child into the world, but it is hardly fit to live.

If, to the delicacy of mothers, we add the irregular lives of fathers, we shall see further cause to believe, that children are often hurt by the constitution of their parents. A course of vice must spoil the best constitution; and when once a disease is contracted and rivetted in the habit, it is in a manner entailed on posterity.

[§] There is a good note in Hargrave's edition of Coke's Littleton on this subject, (vol. iii. p. 188. 123. b. note 190.) It concludes with the following opinions of the celebrated John Hunter. 1. The usual period of gestation is nine calendar months, but there is very commonly a difference of one, two, or three weeks. 2. A child may be born alive at any time from three months, but we see none born with powers of coming to manhood, or of being reared, before seven calendar months, or near that time. The usual period is nine calendar months, or 270 days, and thence to 40 weeks, or 280 days.

[‖] Hippocrates considers perfect birth so essential, that, in his book *De Septimestri Partu*, he contends, that children born in the seventh month seldom live long.

[¶] Nay, Lord Bacon goes so far as to say, that a birth at the eighth month, is

It is certainly of great importance to the health of the child, and the future strength of the individual, that the fœtus should complete nine months in the mother's womb. As to the allegation, that children of eight months will not thrive, when those of seven months will, modern experience has proved that the idea is ill founded. It is now perfectly ascertained, that, with one exception*, the longer the fœtus remains *in utero*, after the seventh month, the stronger and healthier it proves; so that a child born at the end of the eighth month, has a better chance of living than one born before that time. It is incredible, at the same time, what variety, in degree of *vitality*, is observed in the fœtus. In some, the slightest circumstance destroys life, whereas in others, the vital principle is with the utmost difficulty extinguished.

In regard to the question, whether a fœtus of seven months old may become a person distinguished for health and longevity, there is a living witness that such a circumstance may take place; for James Donald, an old man, residing near Dunbarton in Scotland, aged about one hundred years, was born, it is said, in the seventh month.

As there ought properly to be but one child at a birth in the human race, among the cases of imperfect birth, ought to be enumerated, those instances where more infants than one have at once been produced. For, as Bacon has well remarked, the first breeding of creatures is ever most material; consequently, a lesser compression, and a more liberal nourishment of the young one in the womb, tends much to long life. This happens, either when young ones are brought forth successively, as in birds, or when there are single births. In regard to the human race, when there are only twins, it does not seem to make any material difference; and an example has been transmitted to the author, from Montrose in Scotland, of twin brothers of the name of Watt, both still living, who have passed the eightieth year of their age†. This is, however, the only instance of such a circumstance, that has reached our knowledge; and it is believed that no example can be produced of any case, where a greater number than twins have been distinguished for long life.

3. *Gradual Growth.*—Lord Bacon seems to have been the first, who, by a careful and minute inquiry into the duration of the lives, both of man and of a number of different animals, established this important principle, that creatures in general lived in proportion to the slowness with which they reached maturity; and, indeed, this is the case in regard to the vegetable as well as the animal kingdom. It is a sign, he observes, that nature finishes her periods in larger circles.

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not only not long lived, but not likely to live. He adds, that winter births are accounted the longest lived, but this is probably too refined.

* In some particular habits, if the fœtus remains beyond the eighth month *in utero*, it dies for want of nourishment, or some other defect. Under such circumstances, premature labour has been brought on with the happiest effect.

† See Code of Longevity, vol. ii. Appendix, p. 68.

It is owing to this circumstance, that people in cold countries, and whose growth is not accelerated by enriching food, or early debauchery, live much longer than the natives of warm countries, who are reared in a manner in a hot-bed, and who are full grown men and women at twelve years of age*.

Nay, the gradual expansion of the mental faculties, is almost as important as the growth of the person. It rarely happens that premature genius lasts long. Such prodigies seldom survive the fiftieth year of their life, and, in general, they perish at a much earlier period†.

Perhaps one principal cause why the duration of human life is, on the whole, lessened, in periods of civilization and industry, is this, that all descriptions of men are brought forward too rapidly. The children of the poor are compelled to work, before their strength is at all matured, which injures their growth, and lays the foundation of future diseases. The children of the opulent, on the other hand, have their education unnecessarily hastened; and they enter into the world before they are fit to guard against its snares. It is certainly necessary, that a foundation be laid, in early youth, for the most essential branches of education, as grammar, writing, and arithmetic; and some knowledge acquired of the learned languages, and of the most important languages of modern times. If a good foundation, however be laid, and if there be any turn or disposition for the acquisition of learning, it is astonishing how soon a youth of genius will acquire all the knowledge essential for the generality of the situations of life, without being too much hurried on. But if he be brought forward too early, he gets into company beyond his years, he must, to a certain extent, follow their example; he gets habits of dissipation; the growth, both of his body and mind is unfortunately accelerated, and he lays a foundation either for a sickly and miserable old age, or perhaps for a premature dissolution.

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* Buffon makes the difference between the southern and northern parts of Europe, in regard to their inhabitants reaching puberty, only two years, vol. ii. p. 411. But the difference is still greater, when compared with Africa, or the warm climates of Asia and America. It was owing to their avoiding early dissipation, according to Hufeland, that the great size and strength of the ancient Germans ought to be attributed; and it is to the same causes, that the great duration of human life, in many of the mountainous and insular districts of Scotland, is in some degree to be ascribed. Buffon remarks, (vol. ii. p. 411), that children brought up in the country, or whose parents are poor, require two or three years longer to arrive at puberty, than the children of more opulent parents, because their food is not only bad, but given too sparingly. That very circumstance, however, by checking too rapid a growth, may be of service to them, or at least may promote their longevity.

† The most extraordinary instance of early maturity recorded in history, is that of Louis the Second, King of Hungary, who, it is said, was born so long before the natural time, that he had no skin; in his second year he was crowned; in his tenth year he succeeded; in his fourteenth year he had a complete beard; in his fifteenth he married; in his eighteenth he had grey hairs; and in his twentieth he died. See Hufeland on Animal Life. As to weakly children, who are said *to be too wise to live long*, they get forward in point of talent, because they enjoy more of the company and conversation of their parents, from their inability to partake of the sports and exercises suitable to their years.

Though it is generally acknowledged, that the duration of life may be reckoned from the period required in growing to maturity, yet authors differ regarding the manner in which the result ought to be calculated. Buffon contends, that though man finishes his longitudinal growth, or arrives at his highest stature, when he reaches the sixteenth or eighteenth year of his age, yet that his body is not completely unfolded, in regard to thickness, before he has attained thirty. A man, therefore, who grows till thirty, ought to live till ninety or a hundred, or three times the period of his growth*.

Lord Bacon, on the other hand, considers it to be a rule of nature, that animals, in general, should live eight times the number of years which is requisite to the attainment of their perfect growth; and, on the idea that man attains to full maturity at twenty years, a strong presumption thence arises, that the age of man might be extended to one hundred and sixty years.

But Buffon justly remarks†, that persons of either sex, who are long before they arrive at their full growth, should outlive those who advance more rapidly to that point; because, in the latter case, the bones, cartilages, and fibres, are later in arriving at that degree of rigidity which is necessary to their destruction.

4. *Natural Constitution.*—It is hardly to be credited, how much individuals, even those who resemble each other in several respects, vary in constitution or temperament‡; and still more, such as differ in form, looks, size, complexions, &c. You will see one affected by the least cold, and another that can brave all the elements. One bears pain with ease and fortitude, whilst the least bodily trouble affects the other most severely. With some constitutions, all distempers are mild and gentle, whilst with others they are violent, and cured with difficulty. One person, you will find, liable to catch any contagious disorder, whilst another may visit, without hazard, houses the most infected with the plague or other similar malady. One is inclined to get fat and unwieldly, even at an early age, whilst others remain light and active, even to the close of life. In some, there seems to be a certain bodily and mental disposition to longevity; in consequence of which, many individuals, frequently under

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* Buffon, vol. ii. p. 478.

† Buffon, vol. ii. p. 478. The following circumstance tends to prove the dangers of premature growth. The celebrated Berkely, Bishop of Cloyne, took a strange fancy to know, whether it was not in the power of art to increase the human stature; and an unhappy orphan, called *Magrath*, appeared to him a fit subject for the experiment. It is not said what process he pursued for the purpose, but it is certain that the youth became seven feet high in his sixteenth year. He was carried through various parts of Europe for the last years of his life, and exhibited *as the prodigious Irish Giant*. But so disproportioned were his organs, that he contracted an universal imbecility both of body and mind, and died of old age at twenty. See Watkinson's Philosophical Survey of Ireland, one volume octavo, printed at London, anno 1777, p. 187.

‡ Appearances in this respect are very deceitful; but the science of physiognomy has some foundation in nature, though its doctrines must be liable to much uncertainty.

the most unfavourable circumstances, and in the most unwholesome climates, have attained to a great and happy age; whilst in others, the most salubrious country air, a district abounding with aged inhabitants, a strict adherence to the best rules of diet, a regular course of recreation and exercise, and, when necessary, the aid of the most skilful physicians—even all these advantages combined, are not sufficient to insure a long and healthy life*.

It would certainly be desirable to know, why, the human body being equally organized, as far as anatomical observations shew, do not the same general causes produce the same effects upon all? What is the real difference between one constitution or temperament and another? Is it founded upon any difference in organization, hereditary, or otherwise? Or, is it only the consequence of a certain continued manner of life and habit†? It is said, that such questions are inexplicable by the laws of animal economy; and that the idea of distinct temperament is a chimera; nay, that if distinct temperaments did exist in nature, they must be altered by so many adventitious circumstances, that the consequences drawn from them must in general be erroneous. Instead of entering, therefore, into such abstruse speculations, we shall proceed to consider, what are the signs of a constitution, the most likely to enjoy health, and to attain longevity.

It is said, that the great Boerhaave learned the characteristic signs of perfect health, from dealers in slaves, who, from long practice, necessarily become particularly well acquainted with the doctrine of signs or symptoms‡; and some useful information might be obtained, by ascertaining the system pursued by them in such examinations. The following are the signs, which, according to medical authors, denote a good natural constitution, and prognosticate long life.

1. A sound stomach and organs of digestion; without which, it is impossible to enjoy good health, or to attain to great age. Lord Bacon justly calls the stomach "*the father of the family;*" for if it goes wrong, the whole body suffers. It is the principal and most important organ for the restoration of our nature; and, indeed, when our stomach is in good order, the passions, which are so often

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* Lectures on Diet and Regimen, p. 160.

† See Letter from Chevalier Edelcrantz.—Code of Longevity, vol. ii. Appendix, No ii. p. 11.

‡ Professor Finke's Medical Geography, vol. i. p. 449.—As soon as the negroes are landed, he observes, that they are immediately examined with regard to their health, as unblemished slaves are principally sought after. Slave dealers, therefore, are well acquainted with semiotics, (the doctrine of signs or symptoms), and I have somewhere read, that the great Boerhaave learnt the characteristic signs of perfect health from slave-dealers. At the sale, many blemishes are attempted to be concealed, but those which are apparent, very much diminish the value of the slave. The want of a tooth, for example, makes a slave worth two dollars less. The purchaser is only allowed twenty-four hours to examine whether his slave be sound or not.

the causes of disease, have a less destructive influence on our bodies*. 2. A well-organized breast, and organs of respiration; breathing being one of the most incessant and necessary of the vital operations,—the means of rendering the blood, exhausted in the course of circulation, again capable of serving the purposes of life. 3. A heart not too irritable. Though the circulation of the blood is essential, yet it necessarily occasions a great waste, or internal consumption. Those, therefore, who have a hundred pulsations in a minute, must be wasted much more speedily than those who have only sixty. A stout uniform pulse, accordingly, is a strong sign of long life, and a great mean to promote it; whereas a pulse, either always quick, or where every trifling agitation of the mind, or other circumstances, increases its rapidity, can hardly be accompanied by long life. A certain degree of rest is absolutely necessary, that the nourishing particles may settle, and be converted into the substance of our bodies. 4. A good temperament. The best is the sanguine, tempered with a little of the phlegmatic. This produces a serene cheerful mind, moderate passions, undaunted courage, and that state of soul which is the most fitted for longevity. 5. A strong natural power of restoration and healing; by means of which, the losses we daily and hourly sustain, are not only repaired, but repaired well. This not only depends on a sound digestion, and a regular circulation of the blood, but also upon the perfect state of the absorbing vessels, and the organs of secretion; by means of which, our nourishment not only reaches the place of its destination, but also perfectly pure, and completely freed from all extraneous and pernicious mixture. It is this circumstance which has enabled persons, as a Duke de Richelieu and a Louis XV., to attain great age, amidst a life of debauchery and fatigue; for, with such an advantage, consumption may be exceedingly strong, without the individual suffering much, if it be speedily repaired. Nor is a strong natural power of healing less advantageous, since it keeps back and removes the cause of disease. This is more especially exemplified in savages, who are in so healthy a state, that the most dreadful wounds heal up without surgical assistance. 6. An uniform and faultless conformation of the whole body; as an imperfect structure gives an easy opportunity for the rise of local diseases, which may bring on death. 7. No particular weakness of any part; for, even where the organization is apparently good and perfect, there may be a secret enemy in some part or intestine, from which destruction may afterwards be conveyed to the whole body. 8. A medium quality in the texture of the organization, strong and durable, but not too dry or rigid; which latter qualities are extremely prejudicial to the duration of life. In the last place, in the words of an eminent physician, *Sani denique hominis est, venerem appetere, et ad eam valere, et sobolem procreare*†; and, indeed, it seldom happens, that those who are in this respect deficient, or whose persons are mutilated, live long.

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* See Tissot, Essai sur les Maladies des Gens du Monde, p. 8.

† Conspectus Medicinæ Theoreticæ, auctore Jacobo Gregory, M.D. edit. nova. an. 1790; vol. i. cap. 1. p. 11.

But it must not be supposed, that without a natural good constitution, the enjoyment of good health and longevity may be expected; many examples, as that of Galen and others, prove the contrary; and, indeed, it is to be observed, that strong constitutions sometimes do not last so well as the more feeble; for in the first place, those who enjoy that advantage, are tempted to take less care of their health, and to use greater freedom with it; and in the second place, they often suffer more from the same disease, than those who have less energy to contend with it, the vehemence of the disorder, being sometimes aggravated by the strength of the patient.

5. *Form of the Individual.*—Among the various circumstances which necessarily tend to promote health and longevity, independent of attention to the observance of particular rules, there is none of more essential importance, than *the form* which the individual receives from nature; for it is evident, that, in so delicate a machine as man, any material fault, in regard to structure, must sooner or later be fatal*.

As it is probable that the form the most likely to please the sta-

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* Plausible arguments, however, are not wanting, in favour even of deformity. William Hay, Esq. who was a Member of Parliament for several years, wrote an ingenious essay on deformity, which was published separately, and is also preserved in Dodsley's Fugitive Pieces, printed in 2 vols. 8vo. anno 1765. He himself was deformed, and he defends the shape which nature gave him, by the following observations:—

"It is natural to imagine, that if the human frame is warped and disproportioned, it will be lessened in regard to strength and activity, and will be rendered less fit for its different functions; consequently, that deformed persons should not be healthy or long-lived. But this is a question best determined by facts; and, in this case, the instances are too few, or unobserved, to draw a general conclusion from them. Besides, health is more in a person's own power than is commonly imagined, and is more the reward of temperance, than the effect of constitution. The celebrated Esop certainly was not young when he died, and might have lived longer, had he not been murdered at Delphi. The Duke of Luxemburg died at 67; the Lord Treasurer Burleigh at 78; Mr. Pope's father at 75. On the other hand, there are several instances of deformed persons dying at an early age.

"Experience, and the observations of naturalists will determine, whether deformity, *abstractedly considered*, is prejudicial to health; but in its consequences it is most commonly an advantage. Deformed persons having a less share of strength than others, are more careful to preserve it, and are often more inclined to be temperate, which is a great preservative of health. As deformed persons also, are not formed for violent exercise, they are less liable to such disorders as are the natural consequence of it. They also escape many accidents to which persons of an athletic make, and who glory in their strength, are always exposing themselves, to make trial and give proof of it. Few deformed persons, however, can want strength to perform moderate exercise, which is a great preservative of health."

An intelligent correspondent observes, with respect to the form and growth of the individual, that, if we except the narrow chest, and the habit and appearance of debility which some persons have, particularly when young, he does not think that either of these circumstances denote probable longevity, as he has seen long-lived persons of almost all forms, complexions, and habits of body. In general, however, he thinks, that persons of moderately spare habits tuary and painter, from the beauty and symmetry of the shape, is the best calculated to enjoy good health, we shall first give the dimensions which these artists have fixed upon, as the standards of perfection, previous to any medical or anatomical description of a similar nature.

Artists commonly divide the height of the body, into ten times the length of the face; they likewise divide each face, or tenth of the body, into three equal parts; the first commences at the springing of the hair on the forehead, and terminates at the root of the nose; the nose is the second division; and the third extends from the nose to the end of the chin. In measuring the rest of the body, they use the term *nose*, or length of the nose, to denote the third of a face, or the thirtieth part of the body. The first face begins at the root of the hair, above the forehead, and extends to the end of the chin; but from the top of the forehead to the crown, there is still a third of a face, or a nose, in height.—Thus, from the top of the head to the end of the chin, there is a face and a third; from the chin to the juncture of the clavicles, or collar-bones, two-thirds of a face; and, therefore, from the top of the breast to the crown of the head, is twice the length of the face, or the fifth part of the body; from the joining of the clavicles to the under part of the nipples, they reckon one face; from this to the navel, is the fourth face; and the fifth extends from the navel to the divi ion of the inferior extremities, which should complete half the length of the body. Two faces are exhausted between the thigh and knee, to the last of which they allow half a face, being the first half of the eighth face; two faces are assigned between the knee and top of the foot; and from that to the sole, half a face; which completes the ten faces, or length of the body. This division has been made from men of ordinary size; but, in those of a higher stature, they allow about half a face additional, between the nipples and the commencement of the thighs, which, in tall men, is not the middle of the body. When the arms are fully stretched in a horizontal line, the space between the tips of the middle fingers, is equal to the length of the body. From the joining of the collar-bones, to the articulation of the shoulder-bone with that of the arm, is one face; when the arm hangs down, or is bended forward, it is four faces in length; two between the joint of the shoulder and the elbow, and two between the elbow and the root of the little finger; in all five faces; and an equal number for the other arm, which is precisely the length of the body; about half a face remains for the length of the fingers; but it must be remarked, that half a face is lost in the joints of the elbows and shoulders, when the arms are extended. The hand is about a face in length, the thumb a third of a face, or a nose; and the longest toe is nearly of the same

are longer lived than corpulent persons, yet of these he has known many attain different periods between 70 and 80, which is as long as the generality of persons can expect, or perhaps wish, to protract existence.

length with the thumb. The under part of the foot is equal in length to the sixth part of the height of the body.

Such is the standard, according to which we may form an idea of the best proportions of the male human figure; though it may be impossible to find such a degree of symmetry and perfection in any one individual that ever existed[*].

Medical men, in the views they give of the form the best calculated for health and longevity, deal more in general description than in such minute details. According to Hufeland[†], who has dwelt more fully than any other medical author upon this part of the subject, the following is the portrait of a man destined for longevity.

He has a proper and well-proportioned stature, without, however, being too tall. He is rather of the middle size, and somewhat thick set. His complexion is not too florid; at any rate, too much ruddiness in youth is seldom a sign of longevity. His hair approaches rather to the fair than the black; his skin is strong, but not rough. His head is not too big; he has large veins at the extremities, and his shoulders are rather round than flat. His neck is not too long; his belly does not project; and his hands are large, but not too deeply cleft. His foot is rather thick than long: and his legs are firm and round. He has also a broad arched chest, a strong voice, and the faculty of retaining his breath for a long time without difficulty. In general, there is a complete harmony in all his parts. His senses are good, but not too delicate; his pulse is slow and regular.

His stomach is excellent; his appetite good; and digestion easy. He eats slowly, and has not too much thirst, which is always a sign of rapid self-consumption.

In general, he is serene, active, susceptible of joy, love, and hope; but insensible to the impressions of hatred, anger, and avarice. His passions never become too violent or destructive. If he ever gives way to anger, he experiences rather an useful glow of warmth, an artificial and gentle fever, without an overflowing of the gall. He is fond also of employment, particularly calm meditation, and agreeable speculations; is an optimist; a friend to natural affections, and domestic felicity; has no thirst after honours or riches, but is satisfied with his lot.

The sentiments of the celebrated Lord Bacon, upon such a subject, must always be treated with great deference and respect, and it is the more necessary to take notice of them, as he alludes to some particulars not mentioned by Hufeland. Among other observations regarding this point, he remarks, that a head somewhat less than to the proportion of the body, a moderate neck, wide nostrils, a large mouth, an ear gristly, not fleshy, teeth strong and contiguous, firm flesh, a raw-boned body, with veins lying higher than the flesh, betoken long life. He adds, that a broad chest, a large hand, a short and round foot, thighs not fleshy, deep calves of the leg, eyes somewhat large, senses not too quick, the pulse in youth slow, but quicker in old age, facility in holding the breath in youth, the body inclined to be bound, but more laxative in the decline of years, are also signs of long life*.

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[*] Buffon, vol. ii. p. 460, 161. The celebrated artists, Bartolozzi and Cipriani, however, gave more grace to their figures, by deviating from these proportions, and giving more length to the body, particularly in females. In regard to females, Felebien, in his Entretiens, vol. ii. p. 44, 45, has drawn up a particular description of the beauties of the female form, the substance of which is given in Crito, or a Dialogue on Beauty, by Sir Henry Beaumont. See Dedsley's Fugitive Pieces, in two vols. 8vo. printed *anno* 1765.

[†] Vol. i. p. 231.

But it is not from the speculations of artists, of philosophers, or of physicians, that the form the best calculated for health and longevity can alone be described; for the bodies of those who have lived long, having, in various cases, been examined by skilful anatomists, the causes of their long lives, and of their ultimate dissolution, have been thus ascertained, with considerable, though not decisive, accuracy.

The first anatomical account drawn up of the dissection of any old person, is the one given by the celebrated Dr. Harvey, of Thomas Parr, who died (16th November 1638), at the extraordinary age of 152 years and 9 months †. Notwithstanding his great age, yet his body was found very fleshy, his breast hairy and large, his heart was great, thick, fibrous, and fat, his viscera were sound and strong, especially the stomach, his brain was entire and firm, all his inward parts appeared so healthy, that, if he had not changed his diet and air, he might, perhaps, have lived a good while longer. He had such strength of body, that he was able, at the 130th year of his age, to do any husbandman's work, even thrashing of corn; but, coming out of a clear, thin, and free air, into the thick air of London, and after a constant plain and homely country diet, being taken into a splendid family, that of the Earl of Arundel, where he fed high, and drank plentifully of the best wines, the natural functions of the parts of his body became overcharged, his lungs obstructed, and the habit of the whole body quite disordered, upon which there could not but soon ensue a dissolution ‡.

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* He farther observes, that the fair complexioned are shorter livers than the black or red. That the hairs of the head should be hard, and not soft or delicate; and that hairiness of the upper parts, and on the breast, is a sign of short life: but of the lower parts, as the thighs and legs, of long life.

The celebrated Lavater, (Hunter's Translation, vol. iii. p. 169), gives the following as the signs, if not the ingredients, of long life. An elevated forehead, sunk eyes, a large nose, frontal sinuses raised and spacious, a chin firm and prominent, lips closed, a skin soft and puckered, but not over lax, a character artful, suspicious, covetous, and deceitful; obstinacy and emulation are inseparable from it. Every man, he adds, destined to reach an advanced period of life, has a muscular forehead, furnished with a soft skin, and the nose somewhat curved.

† His grandson, Michael Michaelstone, lived to the great age of 127. See Easton, p. 75. He died an. 1763.

‡ The whole description is too long to be here inserted, but will be found in

There is another account of the dissection of an old man, also preserved in the Philosophical Transactions, which merits observation *. It is of a worker in the mines of Switzerland, who died in 1723, aged 109 years and three months. Without entering into the anatomical circumstances therein mentioned, it may be sufficient to remark, that many important parts of the body, which ought to have been soft, were found in a hard state, in many cases bony and cartilaginous, and, in some particular places, quite ossified; plainly proving, that the dissolution of the human frame, is owing to the soft parts becoming hard, and even bony, and, consequently, incapable of performing their proper functions.

A third, and most satisfactory account of the dissection of a person distinguished for old age, is the one given by Doctor James Keill, of John Bayles, a button-maker, who died at Northampton, anno 1706, in the 130th year of his age. This account is accompanied with some judicious reflections on the constitutional requisites for longevity.

Dr. Keill observes, that the weakness of his stomach, and the hardness of the aorta, or the great artery of the body, were the principal causes of his death. The coats of the stomach were so thin, (hardly thicker than thin writing paper), that they were incapable of performing their usual functions, and consequently, his digestion must have been spoiled. He had not tasted meat for some years; and had latterly lived solely on small beer, bread and butter, and sugar. But had his digestion been better, that would have been of little avail, for it was impossible that his blood could circulate duly, while the great artery, having become cartilaginous, gristly, or hard, had lost its elasticity. Nor is this all. His whole flesh and skin felt hard; and his brain was so firm and solid, that, in cutting, it hardly moistened the sides of the knife. It was highly probable, that the same disposition prevailed throughout the whole body. Indeed, whoever considers how soft a substance an animal body is, at its first beginning, and how, from time to time, it acquires firmness and solidity, will easily be induced to believe, that old age brings on a more than ordinary hardness to all the fibres and vessels.

The fibres and vessels of old people becoming thus hard and contracted, the necessary consequence is, a diminution of their secretions; their skin is always dry, and their perspiration very little†.

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the Philosophical Transactions, No. 44, p. 886;—also in Lowthrop's Abridgement, vol iii. p. 306. In Doctor Harvey's account, it is particularly remarked, that the appearance of the *partes generationis* served not a little to confirm the report of his having undergone public censures for incontinency, even at the age of 100, especially seeing that much after that time, he married a widow, who declared, "eum cum ipsa rem habuisse, ut alii mariti solent, et usque at 120 "annos retroactos, solitum cum ea congressum frequentasse."

* Philosophical Transactions, No. 306. See also Mead's Works, p. 349.

† They are likewise generally bound. Old Bayles went to stool but once in the ten or twelve days, for some years before he died. From this circumstance, and from the great quantity of blood which Bayles had, it is probable

The fulness of the vessels, and the frequent rheums and catarrhs of old people, evince the effects of the closeness of the coats of the vessels; and, indeed, when the fibres of the arteries become indurated, instead of assisting, they obstruct the heart in circulating the blood.

From the anatomical examination of Parr and Bayles, there are two particulars which seem to be essentially necessary for the preservation of long life. A due conformation of all the vital parts is certainly most desirable; but a sound heart, and good lungs, are absolutely essential, without which, length of days cannot be expected. The heart, in particular, must be strong and fibrous, for, as it is left alone to force the circulation of a large quantity of sluggish blood, great strength is absolutely requisite to propel the blood through the inactive vessels, to the extremities of the body, and back again, which may be more easily done by men of a low stature, such as old Bayles was. The goodness of the lungs, and a large chest, are also essential requisites, in consequence of which the air has its full effect upon every particle of the blood. Every other means should likewise be thought of, which might render the blood better calculated to be easily moved through the contracted channels of an old body.

Dr. Keill justly remarks, that the dissections of old persons are not yet sufficiently numerous, to ground any positive opinion regarding the effects of age, and the causes of the death of old men*; but that it certainly is a judicious system to follow, to endeavour to preserve such a softness in all the fibres, that they may easily yield to the pressure of the blood, and, by their elasticity, restore themselves to their former state, and thus to enable the body to perform all its proper functions.

Having discussed these anatomical inquiries, we shall now proceed to consider two points, connected with this branch of the subject, which still require more particular attention, namely, height and corpulency.

As to the first, Lord Bacon remarks, that tallness of stature, if it be not immoderate, with a convenient form of making, and not too slender, especially if the body be active withal, is a sign of long life. On the contrary, men of low stature, live long, if they be not too active and stirring †.

The middle-sized, in our opinion, however, are more likely to at-

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that he would have lived longer, with the assistance of opening medicines, which would have diminished the quantity of his blood; or even by gentle and moderate bleedings.

* The necessary information on this head, might be obtained, by dissecting the bodies of such old men as die at any public hospital, in particular those of Chelsea, Greenwich, and Kilmainham.

† To be long, and slow in growing, he adds, is a sign of long life; if to a greater stature, a greater sign; if to a lesser stature, yet a sign; though contrarily, to grow quickly, to a great stature, is an evil sign; if to a small stature, the less evil.

tain longevity than either the tall or short. The tall are too apt to get a habit of stooping, which injures the organs of respiration, and hastens their dissolution[*]: the short are too apt to become fat: whereas the middle-sized can easily keep themselves erect, and are not generally disposed to corpulency.

In regard to leanness on the one hand, or corpulency on the other, Lord Bacon makes the following distinction. To be lean, with a settled temper, denotes long life; and length of life may also be expected, from a more fat habit of body, joined with choler, and a disposition stirring and peremptory.

6. *Sex.*—It has been much disputed, whether individuals of the male or of the female sex live the longest. If women are most exposed to domestic disease, men are most liable to suffer from the dangers of war, the risks of commerce, the fury of the elements, and other external injuries; and also, are more addicted to those irregularities and excesses which shorten life. On the other, it is to be observed, as a circumstance adverse to the longevity of females, particularly in high life, that it is more fashionable to be delicate than robust: whereas, if good health were considered to be an accomplishment, and as necessary for a woman as any showy acquirement, the case would soon be altered[†]. In discussing this point, we shall first state what philosophers say regarding it, and shall then ascertain how far their doctrines are verified by facts.

The bodies of males in general, though not without some exceptions, are stronger, larger, and more active, than those of the females. In the human species, in particular, the male is commonly not only larger than the female, but his muscular fibres are firmer and more compact, and his whole frame indicates a superior strength and robustness of texture[‡]. But as in women, the bones, the cartilages, the muscles, and every other part of the body, are softer and less solid than those of men, they must require more time in hardening to that degree which occasions death; neither are they generally so much subjected, as men, to bodily exertions[§]. Women, of course, ought to live longer than men; nay, it is said, that those men who have a weakly appearance, and who in point of constitution, approach the nearest to women, often live longer than those who are more robust[*].

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[*] It has been suggested, that old people should wear stays to keep themselves erect, as the bending of their bodies is so injurious to them.

[†] See this subject ingeniously discussed in the Manual of Health, p. 17 and 18.

[‡] See Smellie's Philosophy of Natural History, vol. i. p. 236. This very circumstance, however, is against the male at his birth; for the largeness of his size, and in particular of his head, makes him more apt to suffer. Hence, there are more males still-born than females. Hippocrates says, that females are later in forming and growing in the womb than the males: but, when they are born, they grow faster, have their understanding earlier, and are sooner old, on account of the weakness of their bodies, and their manner of living.—*Lynch on Health*, p. 8.

[§] Exercise, if it be too much, (says Lord Bacon), is no friend to prolongation of life; which is one cause why women live longer than men, because they stir less. See Extracts from Bacon, Code of Longevity, vol. iv. p. 289.

This doctrine is fully confirmed by experience; for, by consulting the bills of mortality, it appears, that not only after they have passed a certain age, but even from their birth, the probability of long life is greater in women than in men.

Some authors have laid it down as a general rule, or fact, that the mortality of males is greater than the mortality of females[†]; and that this is the case, not only when they have grown up, but even among children, insomuch, that the proportion in favour of females, is as 39 is to 30. Indeed it appears, from a most authentic document, namely, the Tables of Assignable Annuities for Lives in Holland, which had been kept there for 125 years, wherein the ages, and the sex, of the persons dying, are truly entered, that a given number of females have, in all accidents of age, lived above three or four years longer than the same number of males[‡].

The greater mortality of the male sex is so fully proved, on most unquestionable authority, in the course of Dr. Price's observations, that he conceives, the reason why more males are born than females[§], is this, that there is some particular weakness or delicacy in the constitution of males, which makes them more subject to mortality, and which, consequently, renders it necessary that more of them should be produced, in order to preserve in the world a due proportion between the two sexes[‖]. But this can hardly be admitted. The female is certainly a finer machine than the male, and formed with much more art and contrivance, but it does not equal the male in strength; and the greater mortality of the males, even in their youth, may be attributed to their being more exposed than the other sex to dangers and hardships, and to the inclemency of the seasons, from the time that they are able to go about by themselves.

Dr. Price himself seems to concur in this idea, as, in another part of his work, he questions whether this difference, so unfavourable to males, is *natural;* and, after stating some facts, to corroborate his doubts, he infers from thence, that human life, in males, is more brittle than in females, only in consequence of adventitious causes, or of some particular debility, that takes place in polished and luxurious societies, and especially in great towns[¶].

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[*] See Buffon, vol. ii. p. 477, and Smellie's Philosophy of Natural History, vol. i. p. 509.

[†] Observations on Reversionary Payments, 5th edit. anno 1792, vol. i. p. 8, and 126.

[‡] Philosophical Transactions Abridged, vol. ix. p. 326.

[§] Derham, in his Physico-Theology, p. 175, has stated the proportion of male to female birth, as 10 to 13, but Dr. Price proves that it should be as 20 to 19. *Reversionary Payments*, vol. ii. p. 366.

[‖] Ditto, vol. i. p. 368, and vol. ii. p. 367.

[¶] Ditto, vol. ii. p. 269, and 270.

It may be proper also to mention, that, according to the most authentic information, not only women live longer than men, but that married women live longer than single, in the proportion, according to some registers, of no less than two to one: a difference so great, that it must have been, in some degree, accidental[*].

In regard to the greater mortality of males, after they have reached the age of sixty, that has never been disputed, and is accounted for by the greater softness of the female organs, which retards the hardness which is generally supposed to be the principal cause of death from old age[†].

The doubts, however, which still remain, regarding some particulars connected with this branch of the inquiry, point out the advantages that might be derived, were proper parish registers kept, and bills of mortality formed, for the whole kingdom, under legislative authority, and not in the careless manner practised at present. If this plan were adopted, and properly enforced, it would give the precise law, according to which human life wastes, in all its different stages; and thus supply the necessary data for computing accurately the values of all life-annuities and reversions. It would, likewise, shew the different degrees of healthfulness of different situations, mark the progress of population from year to year, keep always in view the number of people in the kingdom, and, in many other respects, furnish instruction of the greatest importance to the state[‡].

7. *Renovation of the Distinctions of Youth.*—Among the various circumstances which distinguish youth from old age, three of the most remarkable are, the colour of the hair, the possession of teeth, and the clearness of vision. It is singular, that many instances are to be met with, where, after old people have experienced a failing with respect to these particulars, nature has in a manner made a fresh effort to renew the distinctions of youth.

We shall proceed to give instances, where a renovation has taken place, in regard to each.

The Hair.—The colour of the hair varies much in different men, during their youth; but, when they get old, it almost uniformly becomes first grey, and afterwards white. This does not happen at the same age, in every case; for some are grey as early as twenty or twenty-five, while others have only a few grey hairs at fifty, or even sixty years of age.

It can hardly be doubted, that dryness, or want of moisture, is a principal cause of grey hairs; and, consequently, that the custom of wearing hair-powder, must bring them on sooner than otherwise would be the case. There is reason, therefore, to believe, that keeping the roots of the hair well moistened with oily or fat substances, is the best means of keeping back, what so many are inclined to consider as a defect, but which, at the same time, is not inconsistent with the possession of good health, or the attainment of longevity.

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[*] Reversionary Payments, vol. i. p. 364. Vol. ii. p. 196, 197, and 268.

[†] Hufeland, vol. i. p. 168, remarks, that, though more women become old than men, yet that men only attain to the utmost extent of longevity. The equilibrium and pliability of the female body, seem, for a certain time, to give it more durability, and to render it less susceptible of injury from destructive influences. But in all, strength is without doubt necessary to arrive at a very great age. More women, therefore, become old, and fewer very old.

[‡] Price on Reversionary Payments, vol. i. p. 281.

But the singular circumstance is this, that after an individual has got grey hairs, he suddenly or accidentally loses them; and, in their stead, hair of a different colour makes its appearance. Of this, the following examples may be cited.

It is recorded, in the Transactions of the Royal Society*, on the evidence of Dr. Slare, that his grandfather, whose hair, about the eightieth year of his age had become white, grew much darker afterwards.

It is also reported of one Mazarella, who died at Vienna, in the 105th year of his age, that, a few months before his death, he had not only several new teeth, but that his hair, grown grey by age, became black, its original colour†.

A similar circumstance is mentioned of Susan Edmonds, of Winterbourne, Hants, who died at the age of 104; and who, five years before her death, had new hair, of a fine brown colour, which began to turn grey a few months before her death‡.

It is also said, that John Weeks, of New London, in Connecticut, who died at the age of 114 years, lost his grey hairs, which were renewed by hair of a dark colour§.

The Teeth.—There is no particular, in respect of which former generations seem to have enjoyed a greater superiority over the present, than with regard to the duration of their teeth. A place of interment was lately opened at Scone, near Perth, in Scotland, which had remained untouched for above 200 years, and yet, to the astonishment of every one, among a great number of skeletons, which were there discovered, there was hardly any of them whose teeth were not entire and sound‖. This must be ascribed to greater simplicity of diet, to the teeth being less injured by fumes from a disordered stomach, to the custom of drinking hot liquors being then unusual, and perhaps to the absence of scorbutic complaints.

The means of preserving the teeth has been already touched upon in the Chapter regarding Customs. On the present occasion it is only necessary to observe, that many examples may be quoted, where persons, having lost their teeth a second time, have got a third set of teeth, in some cases partly, in others wholly, supplying the places of those they have lost. This circumstance merits to be tended to, for, as Bacon has well observed, new teeth, ur older years, betoken long life.

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* Vol. xxviii.

† Easton on Human Longevity, p. 147.

‡ Ditto, p. 168.

§ Ditto, p. 286.

‖ This curious circumstance has been certified to me, in a letter from the Rev. Mr. Aitken, minister of Scone, near Perth.

— first instances of this circumstance, at all authe- d, is the case of the old Countess of Desmoud, which l to be so remarkable, that many considered it to be Bacon himself, seems to consider it as doubtful. He *'ell a tale* of the old Countess of Desmond, that she or thrice cast her old teeth, and that others came in om*." But the fact is sufficiently authenticated, for one great antiquity, and is corroborated by many other instances. ne Philosophical Transactions†, it is affirmed by Dr. Slare, is grandfather, who was a native of Bedfordshire, had all his strong and firm at the age of 80; and that, within five years wards, *he had a new set*. He adds, that he remained in good h and strength to the 100th year of his age, and even then in consequence of fulness of blood. These circumstances, the or attributes to the frequent use of sugar, of which his rela- was a great eater.

is singular, that the teeth should, in this particular instance, eserved so long, notwithstanding the use of sugar, since the of the teeth is so often attributed to that article‡.

the Philosophical Transactions also, two other instances are ioned: one of Joseph Shute, a clergyman, who got a new tooth he was 81 years of age; and another, Mariah Start, who got teeth at 75 years of age§.

n the return I have received of the old people from Greenwich spital, mention is made of one, (John Moore, a native of Ireland, the oldest man in the house), who said, that he had four new fore-teeth, within five years preceding the return, one of which he had accidentally lost‖.

I myself have seen one James Donald, an old man lately alive, who had got new teeth, which I had an opportunity personally of examining. They appeared to be of a much softer consistence than teeth usually are, and not fit to do the same service; and, on the whole, they can only be considered as an imperfect substitute.

It is said by anatomists, that the foundation of three sets of teeth may frequently be traced in the jaw of man. But, if that is often the case, it is surprising that instances are not more frequent of such teeth being obtained.

The Sight.—There is also reason to believe, that after the sight has been lost, seemingly by a decay of nature, it has again returned, not perhaps in its former perfection, but so as to be of great use.

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[*] Bacon's Works, vol. iii. p. 152.

[†] Vol. xxviii.

[‡] The negroes have fine teeth, though they use much sugar.

[§] Lowthrop's Abridgement, vol. iii. p. 297.

[‖] 'n Easton on Longevity, there are many instances quoted of a renewal of s that of Philip Laroque, p. 104; Marion Gibson, p. 225; &c. &c. s also a remarkable instance of one in Hufeland, vol. i. p. 171.

One of the most singular instances of the sight being renewed, is in the case of Machell Vivan, a native of Scotland, but who was settled as a clergyman in Northumberland, and lived beyond 110 years of age. A particular account of him is given by a person entitled to credit, who saw him personally, in the year 1657, and who declares, that his hair had become like a child's, rather flaxen; that he had three new teeth, which he, however, got with difficulty; and though, about forty years preceding that period, he could not read the largest print without spectacles, yet, that his sight was renewed, so that no print or writing was so small that he could not read it without them. He had five children after he was eighty years of age[*].

I am assured, from respectable authority, that the following circumstance may also be depended upon. A lady in the county of Fife, North Britain, who died at the age of 89, after having been under the necessity of using spectacles for several years, recovered her sight, so that, for some time before she died, she could read very small print, and sew linen, without glasses.

Dr. Rush also mentions an old man (Adam Riffle, of Pennsylvania), who, about the 68th year of his age, gradually lost his sight, and continued entirely blind for the space of twelve years; at the end of which period, his sight returned, without making use of any means for the purpose, and without any visible change in the appearance of the eyes. It is singular, that after recovering his sight, he saw as well as ever he did. During both the gradual loss, and recovery of his sight, he was nowise affected by sickness, but, on the contrary, enjoyed his usual health[†].

Several other instances, of a similar nature, might be quoted[‡], but these are sufficient to establish the general principle, that aged people may have this distinction of youth renewed.

It is singular, that no particular instance has occurred, of the sense of hearing being renewed, after being lost by a decay of nature, or the effects of old age. It is to be observed, however, that the human race are not so apt to lose their hearing as their sight. In the return from Greenwich Hospital, of 96 old men beyond 80, the organ of vision was impaired in about one-half, whereas the organ of hearing only to the extent of about a fifth. But this circumstance can easily be accounted for, as the eye is certainly a more delicate organ than the ear, and more liable to a variety of accidents.

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[*] See Fuller's Worthies of England, fol. edit. 1662, County of Northumberland, p. 369.

[†] Medical Inquiries and Observations, by Benjamin Rush, M. D. printed at Philadelphia, anno 1793, p. 312.

[‡] See Easton on Longevity, account of Thomas Edgar, p. 195; and Janet Allan, p. 215. An intelligent physician informs me, that he knew an old lady of above 70, who had used spectacles at 50, and about 70 could sew fine work without them. She had cartilaginous substances on the gums, which appeared to her as new teeth. When these changes took place, she had a regular monthly discharge of blood from an issue, somewhere about the knee. She was so entirely *renovated* as to walk miles.

Conclusion.—Dr. Rush conjectures*, that the antideluvian age was attained, by the frequent renovation of different parts of the body; and it evidently appears, from the facts above narrated, that such a circumstance was not impossible. At the same time, other reasons may be assigned (which will afterwards be stated†), for the great age of the patriarchs.

Friar Bacon, in his work entitled, "*De retardandis senectutis* "*malis,*" has given us a number of observations regarding what he calls the accidents of old age, as greyness of hair, wrinkles, &c.; nay, he proceeds so far, as to point out medicines which will preserve youth, and cause grey hairs to fall, and black or youthful ones to come in their room. This work, though curious, and therefore meriting to be preserved‡, is unfortunately mingled with much of that mystery, so usual in medical works at the period when it was written.

Lord Bacon has paid particular attention to the subject of the teeth, and the renewal of them. The points to be considered regarding them, he observes, are,—1. The preserving of them. 2. The keeping of them white. 3. The drawing of them with least pain. 4. The staying and easing of the tooth-ach. 5. The binding-in of artificial teeth; and, 6. That great one, *of restoring teeth in age;* which, he says, may be thought of, and would be, indeed, *magnale naturæ*§. But though nature occasionally indulges itself in such renovations, it is hardly possible to believe, that it could be compelled to it, by any means in the power of man to apply; and, indeed, if proper care were paid to the preservation of the teeth, commencing at an early age, it would rarely be necessary.

No. IV. *Result of the Inquiries regarding Athletic Exercises, recently made by Sir John Sinclair.*

THE celebrated Lord Bacon, in alluding to the Athletic Exercises of ancient and modern times, observes, that the practices are known, but the philosophy that concerneth them, is not much inquired into. This he imagines may be the case, because the arts and practices therewith connected, are supposed to be obtained, either by an aptness of nature, which cannot be taught, or only by continual custom, which is easily prescribed; but though he contends that these opinions are not true, yet he forbears to note any deficiencies. He concludes with remarking, that the excellency of those practices serveth, for the most part, but for mercenary ostentation, *yet in mediocrity they are for use*[1].

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* On Old Age, p. 312.

† See Conclusion of this Part.

‡ It is reprinted in the Code of Longevity, vol. iii.

§ Bacon's Works, folio edition, vol. iii. p. 151.

Before I knew that such doctrines were sanctioned by the authority of this great philosopher, I was led, in the course of the investigations I have been carrying on regarding health and longevity, to make a very extensive and particular inquiry, into the nature and effects of athletic exercises; also into the various arts and practices by which the frames of men, or other animals, could be strengthened, or even the opposite effect of *wasting*, could be produced. The information which I have been fortunate enough to collect, regarding these particulars, has been highly satisfactory; and the reader will be enabled to estimate the importance thereof, from a perusal of the following observations.

The points to which I propose more particularly to allude, on the present occasion, are as follow:—1. The form of the individual fit for training. 2. The proper age. 3. The time required. 4. The medicines used. 5. The air necessary. 6. The liquid food. 7. The solid food. 8. The exercise taken. 9. The quantity of sleep. 10. Miscellaneous articles. 11. The diseases which training may occasion. 12. Its effects upon the body. 13. Its effects upon the mind. 14. Whether the effects of training are permanent. 15. The means of wasting strength, and the effects thereof; and, lastly, some observations on the utility of such inquiries[2].

1. *Form and Size.*—A person trained to boxing, ought to be of a good size and weight; but in regard to running, the size is less material: it may vary from five to six feet high, beyond that is too large, nor is there an instance of a very big man being a first-rate runner. One of the most famous runners ever known, (West of Windsor), who at the age of forty-four, ran thirty-one miles in four hours and a quarter, is only five feet four inches high. Long thighs and short legs are desirable for running[3]. Wrestlers ought to be of a middle size, athletic, and in particular, full breasted and broad shouldered, that they may possess both wind and strength. They should also have brawny legs and arms, and yet be clean limbed[4].

It is remarked, that a head proportionally small, betokens corporeal strength, and a person so formed, is reckoned peculiarly fit for training[5].

2. *Age.*—Eighteen is the earliest age fit for training, and thence to forty, but seldom older; though attention to diet and exercise, upon the same system, would doubtless be of use to persons beyond that time of life[6].

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[1] See Bacon's Works, vol. ii. p. 40. Also Code of Longevity, 2d edit. vol. iv. p. 267.

[2] The whole communications on which this paper is founded, are printed in the Second Volume of the Code of Health, second edition, commencing at p. 82 of the Appendix, and terminating at p. 164. There are also some additional observations, p. 281. In the following notes, the page of the volume will only be referred to

[3] P. 93. [4] P. 163, 164. [5] P. 103. [6] P. 98.

3. *Time required.*—It is supposed, that two months are sufficient to bring a man into good plight, either for boxing or running a match, provided he is previously in a tolerably good condition[1]. Sometimes a month will do for running[2]; but at other times it will require three months, when the person is fleshy[3].

4. *Medicines.*—With a view of clearing the stomach, and getting rid of all superfluities, either of blood or any thing else, and also to promote good digestion afterwards, medicines are given when the training is commenced. They begin with an emetic, and in about two days afterwards give them a dose of glauber salts, from one to two ounces; and, missing about two days, another dose, and then a third. It is supposed, that one emetic, and three doses of physic, will clear any man, of all the noxious matter he may have had in his stomach and intestines[4]. In training for running, only one dose of salts at the beginning is necessary; and if it is not found to answer, another dose, in a proper quantity, is administered[5]. The celebrated trainer for running, John Smith, generally gave them an emetic, also, after they had been in training with him for some time; and if they were of a plethoric habit, he required them to lose eight ounces of blood from the arm[6].

The ancients, in order to empty the stomach, previous to their entering on the regimen peculiar to the Athletæ, seem to have preferred the use of emetics to that of purgatives. Stimulating glysters also, were occasionally administered; and one or other of these modes of evacuating the stomach or intestines, was practised, whenever the appetite appeared to flag[7]. In order to exercise the patience of the ancient Athletæ, and to accustom them to bear pain without flinching, they were occasionally flogged on the back, with the branches of a kind of rhododendron, till the blood flowed plentifully. By diminishing the quantity of the circulating fluid, *this rough kind of cupping* was also considered as salutary, in obviating the tendency to plethora, to which they were peculiarly liable[8].

It is proper also to observe, that the necessity of taking medicine, for those who are trained to the acquisition of athletic strength, is not confined to man alone, but is a general rule. Thus race-horses are purged two or three times a-year, each course consisting of three doses, preparatory to their getting into training exercise; and when they use mild physic, it makes them afterwards thrifty and healthful[9]. Game-cocks also, are physicked, three or four days before fighting[10]; or fed on barley, which is reckoned a *scouring* food[11].

5. *Air.*—The necessity of pure air, is uniformly insisted upon by all the trainers to athletic exercises. The more they are in the open air, the firmer their flesh becomes; and they soon learn never to mind the weather, only they must change their clothes if wet[12]. The morning air being cooler, is always preferred for taking exer-

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[1] P. 93. [2] P. 103. [3] P. 93. [4] P. 93. [5] P. 104 and 106.
[6] P. 281. [7] P. 120. [8] P. 121. [9] P. 142. [10] P. 154. [11] P. 151.
[12] P. 97.

cise[1]. Hence, rising early in the morning, is considered to be indispensible[2].

Among the ancients, to be exercised in a pure salubrious air, was deemed of essential importance. The principal schools of the Roman Athletæ, were accordingly established at Capua and Ravenna, places, the air of which was reckoned the most pure and healthy of any in Italy. They carried on their exercises in the open air, in all sorts of weather, the changes of which soon ceased to affect them[3].

Air is also of infinite consequence to other animals. Horses under training, are exercised as much as possible in the open air; and, in order to give game-cocks a good constitution, pure air is found to be essential[4].

The salutary influence of the atmosphere, likewise, is found to be the best means of promoting recovery from disease. When game-cocks are shut up in close pens, they contract an infectious disease called *the roop;* their heart swells, and there is a fetid discharge from their eyes and nostrils. There is no cure for this disease whilst they are confined in the pens; but if they are turned out to their walks, *where they get air and exercise,* most of them will recover[5].

6. *Liquid Food.*—There is no circumstance that seems to be more essential, in training up persons to the acquisition of athletic strength, than to permit them to take only a small quantity of liquid food. Those who are trained to boxing, must not exceed three English pints during the whole day, taken at breakfast and dinner, and a little after supper[6]. Those who are trained to running, are allowed as far as four pints, taken at different times in the course of the day[7]. The ancient Athletæ also, were allowed but a very small quantity of fluid. This *dry diet,* as it is termed, seems to have constituted an essential and important part of their regimen[8]. The The ancient Athletæ likewise, were allowed to drink nothing but water, or some species of thick sweet wine; but in modern times, water alone is never given during training[9]. Good and old malt liquor, which has not been bottled, is reckoned best.' Sometimes it is taken with a toast in it[10]. Some people will have tea, but it is not recommended, nor is it strengthening; and no liquor is given warm. Sometimes white wine and water is given for breakfast, to a person under training, who does not like malt liquor[11]. If the person trained insists on having wine, from being accustomed to it, red wine is preferred to white; and half a pint of wine is allowed after dinner, but none after supper[12]. Spirits are never permitted on any consideration whatever, not even with water. Milk is never given, as it is apt to curdle upon the stomach, and has a fattening quality. Liquor is never given before meals, unless in cases of extreme

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[1] P. 101. [2] P. 97. [3] P. 121. [4] P. 153. [5] P. 283.

[6] P. 95. "The less one drinks, the better," says Jackson, p. 101. [7] P. 124.

[8] P. 119. Sheep also thrive best, and live longer, *on a dry diet.* [9] P. 101

[10] P. 104. Jackson, the celebrated trainer, affirms, "If any person accustomed to drink wine, would try malt liquor for a month, he would find himself much the better for it." P. 102. [11] P. 95. [12] P. 95.

thirst. *The liquor should not be taken in great draughts, but by mouthfuls, which quenches the thirst better, the great object required.*

The reasons assigned for these restrictions are, that too much liquor is apt to swell the belly, which is bad for the wind; and much drinking promotes perspiration, which is extremely weakening, if not occasioned by exercise[1]. Drinking also encourages soft unhealthy flesh[2].

With physic, warm gruel is given to work it off, after which they get a little broth, with boiled mutton; but the broth must be let cool, in order to take off the fat, and then warmed up again. Beef tea, if used, must be managed in the same way; so attentive are these trainers to the smallest minutiæ of diet.

7. *Solid Food.*—This is a very extensive subject. It may be discussed under the following heads: The kind of food, whether animal or vegetable; the quantity allowed; the mode of dressing; the times of eating; the condiments or seasoning permitted; and miscellaneous particulars.

The diet of persons when trained, is extremely simple, consisting only of animal food and stale bread[3]. Turnips, carrots, or other vegetables of that sort, are never given, being difficult to digest; nor potatoes, as they are watery. No fish whatever is allowed, being also reckoned watery, and not to be compared with meat in point of nutriment. No butter nor cheese is given on any account, cheese being accounted indigestible; nor eggs, excepting the yolk raw in the morning, which is supposed to prevent bilious complaints. Veal[4] and lamb are never given. Sometimes, for a change of diet, those who are trained to running, are allowed a fowl or rabbit once a-week; but it must be eaten with vinegar[5]. No pork is given in modern times, being apt to purge some people. The legs of fowls, being very sinewy, are much approved of; but on the whole, beef and mutton are accounted the best kind of diet. Men will live longer on beef, without change[6], than on any other kind of animal food; and it is the most nourishing; but mutton is reckoned to be most easily digested. The meat must always be fresh, for if salted, it would occasion thirst. Fat, being of a greasy nature, creates bile, and fouls the stomach; hence the lean of meat is preferred to the fat; but the lean of fat meat is the best[1].

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[1] See p. 95 and 96, where it is remarked, that if a person inclined to corpulency, instead of taking large draughts, and great quantities of liquor, would be satisfied with three pints a day, he would imperceptibly lose two or three pounds of his weight, in the course of two months.

[2] P. 101. Race-horses get drink twice a day only. Soft water is preferred; and it is given cold, and never hot, except during physic or illness; p. 143. In training game-cocks, the water is got of as soft a quality as possible, and a little toasted bread is put into it, to make it still softer, p. 124.

[3] Soft or new bread is never given, being of a spongy nature, and expanding in the stomach. Stale bread is wholesome, but probably biscuit, or any hard-toasted bread might be as good. Several people prefer biscuit, p. 101. The ancients preferred bread made of the whole flour; and unfermented bread was preferred to that prepared with leaven. A sea-faring man has been heard to observe, that he was always sensible of a diminution of muscular strength, when he left off the use of biscuit, and ate common bread, p. 119.

[4] P. 94. [5] P. 104.

[6] The celebrated trainer to wrestling, Sir Thomas Parkyns, greatly preferred beef eaters to *sheep biters*, as he called those who ate mutton, p. 168.

No quantity of meat is fixed, as so much depends upon the constitution and appetite. In general, they are allowed as much as they can eat[2]. Indeed the ancient Athletæ always ate to satiety, and were sometimes even forced to gorge themselves with food[3]. It is observed that little men will eat as much as large men, and frequently more[4].

As to the mode of dressing the animal food they take, beef-steaks are reckoned very good; but they should be rather *under done*, and indeed meat under done, is, in general, given to those who are put in a course of training. It is better to have the meat broiled than roasted or boiled, by either of which nutriment is lost[5]. Pies and puddings are never given, nor any kind of pastry. As to hard dumplings, people might as well take earthenware into their stomach, they are so indigestible[6].

Two full and substantial meals are given in the day. They breakfast upon meat, about eight o'clock, and dine at two. Suppers are not recommended; but they may take a biscuit and a little cold meat, about eight o'clock, two hours before they go to bed. It is reckoned much against a man's wind, to go to bed with a full stomach, and they in general take a walk after supper[7]. The first meal must be always digested before a second is given. In training game-cocks, it is a constant rule, before they are fed a second time, to examine *the crop*, to see that it is quite empty, and the food formerly taken properly digested[8]. Very little salt is permitted; some vinegar, however, is allowed with the food, as it prevents thirst, and is good to promote leanness[9]. In Yorkshire, the meat is steeped, also, in vinegar. The vinegar must be taken cold[10]. No spices or hot drugs are allowed, being found contrary to the athletic temperament[11].

The following miscellaneous particulars occur regarding this part of the subject. It is observed by Jackson, the celebrated trainer, that the use of solid animal food, seems absolutely requisite to produce great bodily strength[12]. This doctrine seems to be confirmed by the information which has been obtained, regarding the comparative health and longevity of the Mahometans, and the Hindoos of India. The Mahometans, when they can afford it, use a portion of animal food with their rice, (either beef, mutton, or fowl,) dressed with spices. The Hindoos, on the other hand, live chiefly on rice, mixed with pulse, and made savoury with butter and spices. The beverage of both is water. Yet the Hindoos, who being husbandmen, mechanics or soldiers, and who consequently should be healthy, are old at fifty, seldom arrive at the age of seventy, and are often carried off in five or six hours, during the monsoon season, by the *cholera morbus, not having stamina enough to support the evacuations attending that disease;* whereas the Mahometans attain to a great age, sometimes to upwards of ninety[1].

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[1] P. 94 and 95. Also p. 104. In training, any tendency to fat is prevented as much as possible. Four game-cocks reduced to, or at their athletic weight, were killed, and found to be very full of blood, with large hearts, large muscles, *and no fat*. P. 158.

[2] P. 104. [3] P. 119. [4] P. 95. [5] P. 94. [6] P. 95. [7] P. 94.

[8] P. 94. [9] P. 106. [10] P. 151 & 157. [11] P. 154. [12] P. 108.

It is proper here to observe, that the practice of the ancients, and of the moderns, differs considerably in regard to diet. The food of the ancient *Athletæ*, originally consisted of dried figs, new cheese, and boiled grain[2]; but animal food was afterwards introduced as a part of their regimen, and it was found to produce firmer flesh, and to give more real muscular strength than vegetable diet[3].

Of meat, the ancient Athletæ were restricted to the use of pork, which Galen asserts, contains more real nutriment than the flesh of any other animal used as food by man. Indeed he affirms, that if the Athletæ lived but for one day on any other species of meat, they found, that next day, their vigour was manifestly impaired. Modern trainers prefer beef or mutton; which, as food, have probably been brought to greater perfection in modern, than in ancient times. The ancient Athletæ, also, sometimes ate goat's flesh, which was reckoned highly nutritious[4].

8. *Exercise.*—Trained men always begin their exercise early in the morning: in summer, at five, and in winter, at half past six, or as soon as it is light. The great object of exercise is, to produce perspiration sufficient to take off the superfluities of flesh and fat, to reduce the quantity of blood, and to make it thinner and lighter, by which a person gains wind and strength, and giddiness is prevented. Sufficient perspiration is usually produced by exercise, and no sudorific drugs are given for that purpose[5]. Those who are trained to boxing, get a run in the morning, but are not so violently sweated as those who are trained to the foot race. The latter, take a run for three miles, twice a day; and the sweating process, which is intended to remove the obesity, is increased by putting them between feather-beds, and the drinking of warm diluents. Every two days, they are thrice sweated in this way, well rubbed with flannel, and kept within doors till cool[6]. During *the run*, those who are trained to boxing are always in flannel, but they take their walking exercise in their usual clothes. When they come home, they are generally laid down on a bed, and gradually rubbed dry, and clothed in that situation, one limb after another[7]. After taking their regular exercise, they are employed in cricket and other active amusements. Quoits is reckoned a good exercise for them. In Broughton's time, they were accustomed to have music and dancing. If a muscular man, during his training, gets much thinner, his exercise must be re-

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[1] P. 11. [2] P. 117. [3] P. 118. [4] P. 11. [5] P. 96. [6] P. 124.
[7] P. 97

duced; but if he gets fatter, or more muscular, it is a proof that it agrees with him[1].

Exercise, on the whole, seems to be the most essential branch of the athletic regimen. Game-cocks, when gaining strength, are shut up in close pens, and excluded from the air; but it is necessary to give them exercise, and for that purpose they are taken out *to spar*, their spurs being covered, that they may not bruise or wound one another[2]. In regard to horses, the exercise is still more violent, as more depends upon it than is commonly imagined[3]. It is a general rule, *that perspiration, from exercise, never weakens*[4].

The union, however, of vigorous exercise and pure air, is the great secret for the acquisition of strength. Diet itself seems to be but a secondary consideration; at least, if one may judge from the great strength of the natives of the Sandwich Islands, who were much superior in that respect even to British seamen, though their food, both solid and liquid, is of the simplest nature. Indeed, their muscular strength is attributed, by an intelligent observer, to their not using stimulating food or drink, and thus being in a manner in a perpetual state of training[5].

In regard to exercise, if followed up with perseverance and constancy, and not carried to excess, it may be gradually increased, even in old age, to what would be thought a wonderful degree; and, with its increase, the faculties strengthen, and an approach to youth returns.

Quantity of Sleep.—Persons trained to athletic exercises, ought to go to bed early, (about ten o'clock), and are allowed from six to eight hours sleep[6]. Indeed, eight hours sleep is in general reckoned necessary, though much depends upon habit. People who take a good deal of exercise must have rest[7]. The ancient Athletæ were permitted to sleep as many hours as they chose; and great increase of vigour, as well as of bulk, was supposed to be derived from long-continued and sound repose[8].

9. *Miscellaneous Articles.*—In training to athletic exercises, cleanliness is particularly necessary[9]. Bathing is of great use; and, if there is an opportunity, bathing three times a-week in salt water is salutary. Fresh water is good, if salt cannot be had; but the shorter a person remains in the water, the better. It is a useful practice, to prevent colds, for men to bathe their feet in cold water every morning[10]. Fewterell, the boxer, also recommends washing the loins and arms with cold water, and to use no soap on such occasions[11]. Keeping the feet *perfectly dry at all times*, is essential[12]. If the legs are swelled by a long journey, when the person retires to rest, the feet should be raised higher than the head and body[13]. Young people may wear calico next the skin, but older people in general wear flannel[14]. Persons trained, never sit down after taking

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[1] P. 102. [2] P. 97. [3] P. 136. [4] P. 102. [5] Dr. A. P. Buchan, p. 149.
[6] P. 76. [7] P. 97. [8] P. 102. [9] P. 153. [10] P. 99. [11] P. 112.
[12] P. 108. [13] P. 97. [14] P. 97.

exercise, without changing their clothes, for fear of rheumatism[1]. Those who are trained to athletic exercises, must abstain from excesses of every kind; or, in the words of a great classic—

> "Qui studet optatam cursu contingere metam,
> "Multa tulit, fecitque puer, sudavit et alsit;
> "*Abstinuit Venere et Baccho.*"

These are directions to be particularly attended to, for neglecting them is destructive to the acquisition of strength.

10. *Diseases.*—The only bad effect attending training, in modern times, is, that the body at first becomes a little feverish[2]; but, besides the various accidents to which the antient Athletæ were necessarily exposed, in the course of their exercises and combats, they were liable to a rupture of blood-vessels in the lungs, to apoplexy, and to lethargic complaints[3].

11. *Effects on the Body.*—The training to athletic exercises, has important effects upon various parts of the body, as the head, the stomach, the lungs, the skin, and the bones; and also tends materially to improve, and to preserve the shape of the body, and to promote its duration.

In regard to the head, a man in the best ordinary health, when he strikes or receives a few blows, becomes giddy[4]. This giddiness is much owing to excess of blood, and to its thickness, by both of which the head is affected. But both these defects are corrected in the course of training, and giddiness is prevented[5].

Its beneficial effects upon the stomach is proved by the appetite, which becomes much sharper by training. Persons trained are generally costive: because the food must not be of an opening quality; but as so much matter goes off by perspiration, other evacuations cannot be so abundant[6].

The great object of training, however, is, to obtain the benefit of a free respiration, without which nothing great can be performed by man, or horse, or by any other animal[7]. Free and powerful respiration is a certain sign of good health[8], and is essential to a fresh colour of the face, to lively spirits, to cheerful feelings, and to the healthy and vigorous actions of the body[9]. Training always appears to improve the state of the lungs, or to *improve the wind*, as it is said; that is to say, it enables a person to draw a larger inspiration, to hold his breath longer[10], and to recover it sooner, after it is in a manner lost. A man is said to have *a good wind*, when his power of respiration, and continuing the active part of a boxing-match, lasts long; and a bad wind, when he is soon disabled by the fatigue of personal exertion[11].

There is no part of the body, on which training has greater influence, than upon the skin. Clearness of the skin, is the best proof of a man being in a good condition; and the state of the skin, is the criterion by which amateurs judge of a person being fit for exercise. During a course of training, the skin always becomes clear, smooth, well-coloured, and elastic; the veins are distinctly seen through it[1]; and when the hand of a person, in a high state of training, is held up against a lighted candle, the light appears to shine through it[2]. Even the skin of a fat man, when he becomes lean, does not hang loose about him, but becomes elastic and tight[3].

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[1] P. 101. [2] P. 97. [3] P. 122. [4] P. 89. [5] P. 96. [6] P. 96, and 100.
[7] P. 137. [8] P. 145. [9] P. 87, [10] P. 103, [11] P. 113.

The ancients seem to have paid particular attention to the state of the skin, and for that purpose made use of the warm baths and of friction; but as they were accustomed to anoint the skin with unctuous matters, with a mixture of oil and wax, and even with dust, it was the more necessary to take every means of cleansing off[4] those impurities[5].

Training has a remarkable effect *upon the bones*, which get harder and tougher, and are less liable to be injured by blows or exercise[6].

By training, the shape is much improved; the belly in particular is reduced, which is absolutely necessary for a more free respiration[7]. This is particularly the case with horses, whose bellies, swollen with coarse indigestible food, eaten in great profusion, is drawn into half its size in the course of training[8]. The chest also is made more open; and it is a certain fact, that persons who are regularly and constantly exercised, as fencing-masters, &c. retain their appearance, carriage and shape, to the last; which is much in favour, not only of their health, *but of their longevity*[9].

One singular effect of increasing strength is, that electricity has a much greater effect upon muscular and healthy men, than upon others, and more so than even upon children; the same quantity of electrical matter giving them a greater shock, probably owing to the greater resistance[10].

By these processes, the nature of the human frame is totally changed, and in the space of two or three months, the form, the character, and the powers of the body are completely changed, from gross to lean, from weakness to vigorous health, and from a breathless and bloated carcass, to one active and untiring[11]; and thus the very same individual, who but a few months before, became giddy and breathless on the least exertion, has his health not only improved, but is enabled to run thirty miles, with the fleetness of a greyhound, or, in a shortness of time hardly to be credited, to walk above a hundred; or, varying the object in view, to excel in wrestling, or to challenge a professed boxer[1].

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[1] P. 96, and 103. [2] P. 112. [3] P. 97.

[4] It is observed by Dr. A. P. Buchan, that it is more necessary to attend to the skin, as those whose perspiration is free and copious, enjoy a remarkable exemption from pulmonary complaints; whereas a languid and inert condition of the skin, is necessarily attended with a diminution of cutaneous perspiration, to make up for which, a larger share may endeavour to escape by the lungs, and this increased effort, may well be supposed to lay the foundation of disease. P. 128.

[5] P. 119. [6] P. 97. [7] P. 104. [8] P. 90. [9] P. 103. [10] P. 99.

[11] P. 92. According to the technical phrase, he becomes light and *airly*.

12. *Effects on the Mind.*—The effects of training upon the mind, are also of the highest importance. The stomach being cleansed, the digestion rendered better, the blood ameliorated, and every animal function improved, the consequences are, that the attention becomes more ready, the perceptions more acute, and the mental faculties not only brighter and more elevated[2], but are preserved longer in old age[3]. The mind also becomes more courageous, corporeal sufferings are borne with patience, a command of temper, and a presence of mind are also acquired, and preserved undisturbed, amidst pain and danger[4].

13. *Whether the Effects are permanent.*—How far such effects are permanent, is a point that is much disputed[5]. The temporary excitement of great strength, for a particular purpose, is certainly not calculated for permanency[6]; but the state of health, after training, is always good, and not subject to complaints; and the acquired state of health would probably continue, if the system were persevered in. Many boxers indeed have lived long, or at least to the age of eighty and upwards; but many of the principal boxers have died young, owing to excesses of every sort, in which they are apt to indulge after the training is over. Were it not for that circumstance, and the injuries they receive by blows in the body, they would live long enough. Blows on the head are soon recovered[7].

It is also remarked, that running-horses, when trained, do not wear out sooner than other horses; on the contrary, they bear fatigue much better[8]. Nor does training game-cocks shorten their lives; on the contrary, they live longer than common poultry.

14. *Reduction of Strength.*—Having thus seen how strength can be acquired, it was thought that it would also be a desirable circumstance, to ascertain the nature and effects of a practice not unusual at Newmarket, and at other places where horse racing is an object, —that of reducing the weight of horse-jockies, that they may be enabled to ride particular horses, without loading them with too much weight; even a small addition making a great difference, in the course of a race, the success of which depends upon swiftness. Persons pitched upon for that profession will, of course, be light and slender, but they are often under the necessity of reducing their weight, considerably and that at very short notice; sometimes in a week or ten days, to the amount of a stone and a half[9], and some-

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[1] Such are the effects of training, that the best cock, when undieted, is unable to encounter the worst, that is dieted. P. 155.

[2] P. 87. [3] P. 145. [4] P. 132.

[5] The ancient Athletæ rarely preserved their vigour so as to be fit to appear in public for a longer period than five years, and they are represented by Galen as a short-lived race of men; but this may be attributed to their moral conduct; for when they were not under a course of discipline, they indulged themselves in every kind of drunkenness and debauchery. P. 122.

[6] P. 105. [7] P. 98. [8] P. 144. [9] P. 158.

times even two stones, though that is reckoned a dangerous experiment[1]. This is effected, partly by diet, but principally by great exercise, and violent perspirations. Their diet in general consists of a small piece of bread and sometimes a little butter, with tea in moderation, for breakfast; fish, if it can be obtained; if not, a small piece of pudding, and less meat, for dinner; tea in the afternoon, with little or no bread or butter; and no supper whatever. Instead of malt liquor, they take wine and water, one part wine and two parts water[2]. Their exercise is very severe, consisting of a walk after breakfast, of from ten to fifteen or sixteen miles, loaded with five or six waistcoats, two coats, and as many pairs of breeches[3]. Those who do not like excessive walking, have recourse to Glauber salts[4]. Sometimes even more violent measures are adopted. Besides privation of food, and violent exercise, they are put between two feather-beds, placed before a great fire, or in a barrel, and sweated as much as possible[5]. Even strong, powerful, and healthy men, have thus ruined their health; and such practices may ultimately terminate, either in death, or premature old age.

The following observations, which have occurred in the course of this branch of the inquiry, it may be proper more particularly to state. 1. When privation of diet is carried to any extent, the stomach, weaned from food by every means, will not afterwards receive or retain it, and the consequences are generally fatal. 2. Common jockies, who have been accustomed to be thus wasted, stand it better than gentlemen, to whom such practices must be more unusual[6]. 3. It is hardly to be credited, how very soon jockies who have been thus wasted, recover their former state and weight[7]. And, 4. Several jockies are known to have been frequently severely wasted, without being injured thereby[8]; and some of them have reached even an advanced age[9].

On the Utility of such Inquiries.

On the whole, the subject of athletic exercises seems to be well entitled to more attention than has hitherto been paid to it, *in a medical point of view*[10]. Several gentlemen who have been trained for amusement merely, declare, that they consider the science of boxing to be a most healthful, bracing and manly exercise, and that the requisite training does a man good instead of harm[1]. To be trained to running or walking also, is most healthful, if judiciously gone about, and not carried to any improper length; and those who have been trained, never look better, than immediately after their walking matches[2]. The true cause, why persons trained to those exercises, are in general short-lived, certainly arises from their dissolute lives, after giving up their respective occupations, and commencing *idle men*, as they generally do.

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[1] P. 145. [2] P. 138. [3] P. 138. [4] P. 139. [5] P. 160.

[6] P. 160. It has been observed, in regard to boxing, that persons in high life cannot be treated, when trained, (at least at first), exactly in the same manner as common men, from the indulgencies to which they have been accustomed; nor are their frames in general so strong. Jackson, the celebrated trainer, observes, that they eat too many made dishes, and other improper food, and sit too long at table. They also eat too great a variety of articles, and drink too much wine. No man should drink more than half a pint of wine. They also keep irregular hours, and lie too long in bed. P. 98.

[7] P. 161. Buckle, the great rider, after severe wasting, has gained nine pounds in eighteen hours. P. 140. It is said, that a couple of glasses of good sherry will increase the weight of a person severely wasted, nearly two pounds in the space of a few hours.

[8] P. 139, and 140. [9] P. 146.

[10] For the advantages of fencing, see an intelligent letter by Henry Angelo, Esq. Code of Health, 2d edit. vol. ii. p. 163-4.

There is reason also to believe, that by training men in a regular manner to boxing, and other athletic exercises, without meaning to engage in any personal contest; not only the general health might be confirmed, but that many diseases might also be prevented. In regard to this point, the evidence is extremely important[3]. Jackson, the celebrated trainer, states, that by training, the skin always becomes quite clear, even though formerly subject to eruptions[4];—that it always appears to improve the state of the lungs, and consequently must be useful in disorders affecting that organ: that nervous disorders are always prevented by it: that there never was an instance of a trained person being paralytic[5]: that a course of training is an effectual remedy for bilious complaints[6]; and that the gout may, in a great measure, by the same means, be prevented from recurring[7]. These are certainly the assertions of a person, partial to the art he practises; but whoever considers deliberately the facts and observations above stated, must be satisfied, that they are not so groundless as at first glance might be imagined. Indeed, how is it possible, that the body, by training, could acquire such strength and firmness, as it evidently does, without undergoing a change, which must have a material effect, not only upon the whole frame, but also upon every individual particle of it?

Conclusion.—I trust it will appear, from the preceding observations, that these inquiries have not been useless, as they demonstrate, by the most irrefragable examples, the extraordinary alteration which may be effected, by a proper system, on the human frame; and more especially, the effects which will result from a due attention to air, to diet, and to exercise[8].

The advantage of such inquiries, Lord Bacon descried, with his eagle eye of philosophic intelligence; and nothing now remains, but to apply the facts and observations which have now been collected, to practical use.

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[1] Boxing puts in active motion, all the members of the body; in particular, both the hands and arms, are equally employed, in hitting and parrying.

[2] P. 161.

[3] There is no instance as yet, of any person being positively put in training, for the sole purpose of recovering health; but it is known, that a gentleman, in a bad state of health, after living hard in London, has gone to the country, and by living in some respects according to the training system, has returned to London completely recovered. P. 98.

[4] P. 100. [5] P. 102. [6] P. 99. [7] P. 98. [8] P. 123.

The first point to be considered, is, whether it would not be advisable, to train young men to boxing, fencing, and other athletic exercises; and to make it a much more general practice at our schools, and universities, than hitherto has been the case. There is every reason to believe, that by following such a plan, a foundation of health and strength may be laid in youth, that will be found of infinite consequence, in every future period of life.

It is also well worth consideration, whether the army in general, both officers and soldiers, ought not to be trained to some of these athletic exercises, and occasionally employed in them, with a view of strengthening their frames, and enabling them the better to sustain the hardships of war. The weight of the arms the latter have to carry, would then be no longer felt; and marching to a much greater distance than is usual at present, would not prevent their coming to the field of battle, in a state fit to encounter, and to subdue an enemy.

Above all, these particulars are submitted to the consideration of medical men. Their enlightened minds must derive advantage, from a series of facts and observations, to which they have hitherto had but little access. In some cases, where there exists a predisposition to gout or to consumption, perhaps the attacks of the disorder may either be postponed, or its severity may be mitigated, by the practices above explained; and there are other cases, where a course of training, may remove complaints of a nervous or bilious tendency. It is not improbable also, that, under their auspices, new improvements may be made in these arts, the beneficial effects of which, both on the mind and the body, even in their present state, have, it is hoped, been already sufficiently demonstrated, in the course of the preceding observations.

JOHN SINCLAIR.

Charlotte Square,
Edin. *20th, Jan.* 1807.

No. V. *On the Powers and Passions of the Human Mind.*

In the brute creation, it is seldom that any appearance of a thinking faculty can be traced, whereas in the human species there is a capacity to acquire knowledge, a power of increasing it, and a faculty of using it, which points out man to be a being of a superior order, when compared with the other inhabitants of the globe.

Philosophers have given a very accurate analysis of the faculties of the mind, and discriminated the various powers which it possesses. We shall first state the doctrines which they have promulgated upon that subject, and shall afterwards endeavour, by a familiar example, to explain the various operations which they have described, a knowledge of which cannot fail to be useful*.

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* See Stewart's Elements of the Philosophy of the Human Mind, 2d edit. p. 23, an admirable work, in which the advantages resulting from a knowledge of the faculties of the mind, are particularly pointed out.

1. *On the Powers of the Mind.*

The powers of the mind may be classed under the following general heads.

1. *Perception*—By which the mind becomes conscious of any thing, through the medium of one of the senses, as the existence of a horse, of a tree, of a building, &c. by the sight; of a musical instrument, when played upon, by the ear, &c. 2. *Attention*—By which we retain "*the fleeting forms of things*," and do not merely perceive, for a moment, the existence of a horse, of a tree, &c. but have so fixed the idea in our minds, that the impression of it is not displaced when our mind receives the impression of any other idea. 3. *Retention*, or memory, by which we can preserve the ideas fixed in our minds, more especially those which we have contemplated longest, and which have made the strongest impression upon our minds. 4. *Recollection*—By which we are enabled to call forth the idea, without any assistance from the particular object or circumstance which first impressed it in our minds, though several other ideas, of a different nature, have in the mean time intervened. 5. *Imagination*—By which one idea leads to another, without any immediate connexion between them; and by which also, a number of ideas may thus be so combined and disposed, as to form in a manner a new creation. 6. *The Faculty of Comparing*—By which we are enabled to contemplate one, two, or more ideas, to set them as it were against each other, and to consider where they agree or disagree. 7. *Discernment*—By which we can discover directly and immediately, the agreement or disagreement, connection or repugnance, of the ideas we have compared together; for instance, if the question is, whether John or Thomas is the tallest; if we perceive the two together, we can easily estimate within our minds, (if there be any material difference between them), and after comparing them together in our minds, can discern the difference. 8. *The Faculty of Abstracting*—By which the mind can separate a number of ideas which it received at one and the same time; and by simplifying the objects of its consideration, and classing them together, can form *general ideas*, which is one of the most essential foundations of knowledge. 9. *The Power of Compounding*—By which we can associate ideas formed at different times, and relating apparently to different objects, into one new or combined idea. 10. *The Reasoning Faculty*—By which we can compare not only two, three, or more ideas together, but also can institute a comparison between a number of ideas, and all their possible relations and connections with each other, and, with a rapidity hardly to be conceived, can discern their agreement or disagreement, their connexion or repugnance with each other. This faculty, which enables us to deduce one proposition from another, and to proceed from premises to consequences, is of such importance, and gives us such a superiority over the brute creation, that we often talk of it as if it were a being existing by itself. 11. *Judgment*—By means of which, finding no intermediate ideas at all likely to enable us to ascertain the agree-

ment or disagreement between two ideas intended to be compared, we then compare them with other ideas which produce a *probability* of their agreeing or disagreeing, and our conclusion in that case we call judgment. 12. *Invention*—By means of which, we can search throughout the whole magazine of ideas we are master of; and, in the course of the search, we may discover some ideas entirely new, which, unlike those of the imagination, are not merely fanciful, but, as in the case of the invention of new machinery, may be applicable to real use. 13. *The Designing Faculty*—By which a person is enabled to determine to perform such an action, or to think upon such a subject at a future period, whether near or even distant. 14. *The Foreseeing Faculty*—By which, in forming a design, or in considering the actions and incidents of life, we find there are some things which may be necessary for the success of our future designs, or other things which may prevent the execution thereof; hence the advantage of being endued with this faculty of foresight, for we can thence endeavour to obviate the difficulties we are likely to encounter, and to obtain what is necessary for our success. 15. *The Faculty of Volition*;—or, the power of governing, applying, or exercising all the active faculties of the mind. By this faculty, we are enabled to contemplate, recollect, compare, abstract, compound, or reason, whenever we please, respecting what ideas we think proper, and as long as we may incline. Lastly, *Conscience*,—having thus a complete command over our ideas, and consequently over our actions, which result therefrom; we may do what is wrong, and hence the advantage of that faculty called conscience, by which we are enabled to judge of the morality of our actions, and are induced, in the exercise of our will, to do what is right, oftener than if we were deprived of that faithful monitor*.

Such is the general nature of those wonderful powers with which the mind of man is endued; and some notion of which ought certainly to be acquired by every rational being. The subject is undoubtedly abstruse, and requires much serious contemplation, in order to be thoroughly master of it. To assist those who are not accustomed to philosophic researches, we shall endeavour to exemplify the various operations of the human mind, and the powers of which it is possessed, by a familiar example, which, as it is a new attempt, may not be at first so complete and satisfactory, as it may afterwards be rendered.

A Mental Drama; or, the Story of a London Merchant: exemplifying the various Operations of the Human Mind.

1. *Perception.*—Mr. Wilkinson, a respectable merchant of the city of London, accidentally saw the King, the Queen, the Prince

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* The preceding account is taken from a useful compilation regarding the nature of man, his mental faculties and passions, drawn up by R. C. Dallas, Esq. intitled, "Elements of Self-Knowledge," printed in one volume, 8vo. anno 1802.

of Wales, and the Duke of York, walking together on the Terrace at Windsor, on the 1st of June, 1801.

2. *Attention.*—He perceived them so distinctly, that he was sure it was not a dream or vision, but a real scene that passed before him; and as he had never seen these illustrious personages before, and, like every good subject, was deeply interested in every thing connected with them, their form, their looks, their deportment, &c. he surveyed them *with attention*, that he might remember accurately what he had observed, and relate it to his friends.

3. *Retention, or Memory.*—The impressions made on his mind by this event were so deep and lasting, that the remembrance of it was retained in his mind, when many other circumstances which happened on the same day, or at nearly the same period of time, were forgotten.

4. *Recollection.*—The event being thus fixed in the memory, the merchant finds himself endued with the faculty of calling forth the idea of it, at any time, or in any place, though a thousand different events have in the mean time intervened.

5. *Imagination.*—Though the event can be recalled to his memory, as it was originally seen or perceived, yet he may form an idea of the same personages, in other situations in which he never saw them; for instance, he may imagine the King seated on his throne; the Queen presiding at the drawing-room; the Prince of Wales at the head of his regiment; and the Duke of York reviewing the artillery at Woolwich.

6. *The Faculty of Comparing.*—The mind having received these impressions, may compare them with others; for instance, may compare the principal branches of the Royal Family of England with those of Spain, in point of age, in point of character, and in point of talents.

7. *Discernment.*—Having placed his ideas regarding the Royal Family of Great Britain, and that of Spain, in opposition to each other, the merchant may at once discern, as if it were intuitively, the difference between them, and in what respects the one possesses a superiority over the other.

8. *The Faculty of Abstracting.*—Although it was George III. his Queen Charlotte, and their two elder sons whom the merchant saw, yet he may form an idea of any of these independently of their rank; and in the same manner he may form an idea of a King, a Queen, an Heir Apparent, or a Field Marshal, totally independent of the individuals whom he had seen at Windsor.

9. *The Power of Associating or Compounding.*—But all the circumstances he saw on the first of June were so intimately connected, that the perception of any of them immediately suggests the other. He never sees Windsor Terrace, but he immediately associates with it the Royal Family, and the sight of any of them recalls to his mind the others; at the same time, he can also associate these ideas with others which did not take place at the same time.

The Reasoning Faculty.—The same event may also lead to the exercise of the reasoning faculty. If there is a dispute, whether the Duke of York is taller than the Prince of Wales, where no actual measurement has taken place, such reasons, as the following, may be assigned in favour of one side of the question. The merchant may say, "I saw them both standing together, the Duke " seemed to me about the size of Mr. Anderson, the Prince was as " tall as Mr. Duncan, and every body knows that Mr. Duncan is " taller than Mr. Anderson." Thus addressing his reasoning to the understanding, and perhaps personal knowledge, of the individual with whom he was conversing.

11. *Judgment.*—The reasoning faculty enables us to call up those arguments which may be made use of on both sides of any question, and to estimate their relative importance, so as to come to a decision. Thus the merchant may have received, from a foreign correspondent, some rare and beautiful birds. He knows that, if he were to sell them, they would produce a considerable sum of money; but he thinks, that they would be an acceptable present to Her Majesty. He will prefer one or other of these destinations, according to his *judgment.*

12. *Invention.*—If he shall have determined to present them to Her Majesty, he may propose to enhance the value of the present, by sending them in cages of a new and beautiful form, invented by himself; and, in order that he may witness the gracious manner in which his present will be received, he may contrive some means of being introduced to the Royal Family, and of presenting it himself.

13. *Design.*—The merchant being much pleased with the spectacle he saw at Windsor Terrace, and wishing to see it once more, may resolve to go a second time to Windsor, on the anniversary of that day, with the express *design* of seeing the Royal Family again, on the idea that they usually reside at Windsor at that season of the year, are frequently to be seen on the Terrace, and perhaps may recollect, on seeing him, the beautiful birds he had presented.

14. *Foresight.*—Having formed the design of seeing the principal branches of the Royal Family, at Windsor Terrace, on such a day, the merchant may *foresee* many difficulties in the way of his intentions being accomplished. He wants a carriage;—that he borrows from a friend. He wants a pair of horses;—these he hires from a stable-keeper; and thus, by exercising his faculty of foreseeing, he is enabled to carry his design into effect.

15. *Volition.*—The merchant having communicated to his partner, Mr. Seabright, his intention of going to Windsor on the 1st of June 1802, and that any obstacles which he had foreseen had been removed, he is told by that gentleman, that his leaving London on that day, might be productive of great disadvantage to his affairs, as he ought to attend to the unloading of a ship, an account of whose arrival in the river had been just received. Exercising, however, his powers of *volition,* he went to Windsor.

16. *Conscience.*—The merchant having gone, notwithstanding the remonstrances of his partner, and the serious loss which he and

his family were likely to sustain by his absence on that day, he felt but little pleasure from the excursion, his *conscience* informing him, during the whole time, that he was acting in a manner that did not become a prudent and cautious man, nor could the affable and condescending reception he met with from the Royal Family efface that idea.

Such is a familiar example of the various astonishing faculties of the human mind, of which it is difficult, without such aid, for a person, unaccustomed to abstract ideas, to form any adequate conception. From this enumeration, it appears less wonderful, that one individual should differ so much from another in point of genius or talent.

There are persons who enjoy only some of these faculties in any tolerable degree of perfection, and perhaps may feel a great deficiency regarding the most material, as the faculty of recollection or memory, and that of reasoning. There are others who enjoy all the powers of the mind above enumerated, but none of them to any great extent.

If we could conceive any mental perfection in human nature, it would be in that fortunate individual, who not only possessed them all, but also each of them, to the utmost extent of which they were capable.

2. *On the Passions.*

The faculties of the mind were given, for the purpose of enabling it to govern the body, which is placed under its protection. But, as the mind, from its spiritual nature, might be inclined to dwell on abstract ideas merely, and to forget the body it was appointed to govern, it has therefore attached to it a number of motives for action, known under the name of THE PASSIONS, and which, instead of being a flaw or defect in the formation of the human system, are, in fact, essential for its happiness and existence.

A passion has been defined, " A movement of the mind, occasioned by some strong impression made upon it, either by external objects through the senses, or by the power of the imagination." The passions, therefore, are the great springs of action, impelling the mind, or spirit, through the influence of which the body is governed. The passions are certainly the springs of virtue, and intended for the benefit of mankind; but though, in their nature and origin good, yet, they are too apt to run into a contrary extreme, and become the sources of vice. If we make a proper exercise of our mental faculties, however, we may govern our passions, and direct them to their true and proper ends.

As it would require a volume to explain fully the nature and diversity of these passions, we shall content ourselves with giving an analysis of them, distinguishing, 1. The source of each; 2. Its varieties or natural branches; and, 3. Its deviations; by which means we shall be able to distinguish at once the genuine emotions of human nature, in its perfect state, from those which are the unfortunate consequences of its depravity *.

Analysis of the Passions.

SOURCES.	VARIETIES.	DEVIATIONS.
AMBITION,	*Desire of Power,* *Desire of Fame,*	Avarice, Envy.
ANGER,	*Indignation,* *Resentment,*	Retaliation, Revenge, Rage, Fury, Fretfulness, Moroseness, Surliness, Hastiness, Sullenness.
ANTIPATHY, OR AVERSION,	*Natural Repugnance,*	Hatred, Malevolence, Rancour, Spite, Misanthropy.
CURIOSITY,	*Desire of Information,*	Futile Curiosity, Dishonourable Curiosity.
FEAR,	*Timidity,* *Terror,* *Horror,* *Awe,*	Cowardice.
HOPE,	*Rational Hope,*	Chimerical Hope.
JOY,	*Cheerfulness,* *Mirth,*	Exultation, False Spirits fictitiously procured. Malignant Joy.
LOVE,	*Self Love,* *Social Love,* *Parental Affection,* *Esteem,* *Friendship,* *Patriotism,* *Philanthropy,* *Benevolence,* *Charity,* *Gratitude,* *Piety,*	Pride, Arrogance, Haughtiness, Vain Glory, Vanity, Jealousy.

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* See Elements of Self-knowledge, p. 244.

No. VII. *Society for ascertaining the Means of preserving Health, more especially among the Lower Orders of the Community.*

Circular Letter, suggesting such an Institution.

SIR,

WERE I not deeply impressed with a conviction, that a Society for ascertaining the Means of preserving Health, would be of infinite advantage, not only to those individuals who become members of it, but to mankind in general, I should never have attempted the laborious task, of forming such an institution. I entertain, however, no doubt, that a society, constituted on a proper scale, and regulated on a proper system, having that object solely in view, would be of more service to human nature, *than any institution that has hitherto been suggested.*

This is a point regarding which, from my own experience, I can speak with confidence. Several years ago, my health was in a very indifferent state, and it became necessary for me to inquire, by what means it was the most likely to be restored. From the information which I was thence led to collect, that object has happily been accomplished, insomuch, that no man of the same age, can now go through more personal or mental labour; and whilst so many others have spent their time in misery, or fallen a sacrifice to disease, I have happily enjoyed, for above eighteen years, *by attention to useful practices,* uninterrupted good health. Indeed had I known thirty years ago, what I am now acquainted with, I am fully convinced, that during all that period, I should hardly have experienced any illness whatever, and that I shall in future escape many miserable hours, to which otherwise I must have been subjected.

It is impossible, however, for the labour, or the fortune of any one individual, to collect all the information connected with such important and extensive objects of inquiry; nor can it be obtained in any one country. That great work can only be successfully carried through, by the united exertions of a great and respectable institution, combining their knowledge, extending their inquiries wherever they are likely to be successful, and possessing a fund not only adequate to any common expences, but which will enable them to hold forth rewards to those, who shall communicate the most valuable information, or the most useful discoveries. Impressed with these ideas, I have been led to circulate the annexed paper, containing the plan of such an establishment.

If the proposed institution should have the good fortune of meeting with your approbation, I have to request, that, in addition to your own name and address, you will take the trouble of sending to me, a list of those to whom the idea of such a society is likely to be acceptable, that the plan of the proposed establishment, may be transmitted to them, and that a society may be formed, on such a scale, and comprehending so many respectable members, that it can hardly fail to complete the object it undertakes to accomplish: namely, "*That of ascertaining the means by which "health can best be preserved, or, if it should unfortunately have "been lost, may be regained.*"

I have the honour to be, Sir,
Your faithful and obedient servant,
JOHN SINCLAIR.

Plan of a Society for the Preservation of Health.

The greatest blessing of a personal nature, which any individual can possibly enjoy, and without the possession of which, the labouring classes of the community in particular, are the most wretched of beings, THAT OF HEALTH, in a great measure depends, upon the knowledge of a number of rules, regarding air, diet, exercise, digestion, sleep, clothing, &c. which are no where taught*, and which have never yet been collected, or arranged in so complete a manner, as would be desirable.

In order that knowledge, of a description so peculiarly important, may be collected and systematized, and that all the information essential for the preservation of health, may be condensed within a moderate compass, and rendered more easily accessible to the public†, it is proposed to erect a Society for that special purpose.

There is every reason to believe, that the intended plan may be completed in six years, and that two pounds the first year, and one pound per annum for five years longer, from every member of the proposed Society, will be sufficient to accomplish the objects in view.

It is proposed that any sum that may be obtained, shall be laid out,—1. In the purchase and circulation of books connected with the subjects of health and longevity. 2. In translating any valuable works from the French, the German, and other foreign languages, whence much useful information may be derived. 3. In bestowing either honorary or pecuniary rewards, on such persons, whether natives or foreigners, who shall communicate to the Society, any useful work,—or any important fact, founded on actual experiment,—or any valuable medicine, for the various disorders to which the human frame is incident, or who shall in any other mode promote the objects of the institution; and, 4. In publishing the result of the information collected, a copy of which shall be presented to every member of the Society; and which will most amply repay the expences he has incurred in becoming a member.

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* If the funds of the society would admit of it, what could be more desirable, than to have public lectures given on the preservation of health, that our youth might be early taught such an essential branch of knowledge. How usual is it, in persons advanced in life, to wish, that they had known earlier, what experience had slowly taught them?

† By the efforts of the Society, also, cheap tracts, explaining to the lower orders, the best means of feeding themselves and their families, and preserving their health, might be circulated with great advantage to them, and to the public; by means of which, a large proportion of those miserable objects, who now people our hospitals, might find any refuge of that sort unnecessary: and a great saving might likewise arise in the burden of the poor's-rates.

Other institutions have, in various respects, done much service to mankind; but if any society can solve that problem, "*What are the best means of preserving health,*" every other sublunary object, of a personal nature, must sink in the balance.

Those who may wish to belong to the intended institution, will please to transmit their names and address, to Sir John Sinclair, Bart. 236, Oxford-street, London; and they shall be informed of the day fixed for the first meeting of the proposed Society.

It is proposed that Ladies may become members of the Society, as it is an institution, whose objects are so much connected with the generosity and benevolence so conspicuous in the female character.

Various circumstances prevented this plan from being carried into effect at the time when it was originally suggested; but the first favourable opportunity shall be embraced for that purpose.

No. VIII.—*On some recent Discoveries in the Cure of Rheumatic Disorders. By Sir John Sinclair.*

HAVING accidentally heard, that Admiral Henry, of Rolvenden in Kent, had been extremely successful in curing the rheumatism, and other disorders, by peculiar processes of his own invention, I thought it highly important, to ascertain, on the spot, the correctness of these reports; and, for that purpose, paid a visit to the Admiral in October 1816.

Though the gallant veteran, with a view of preventing and curing disease, had taken more liberty with the human frame, than, probably, any man, before him, had ever attempted; yet I found him, at the age of 85, with all the activity and vigour of youth; and, after having got the better of several disorders, to which he had been subject, enjoying as perfect a state of health, as any man in England.

Without, however, entering into the cure of the other disorders with which he had been afflicted, it is proposed, in this place, to give merely a short account, of the means adopted by him, for the cure of the rheumatism.

It was in the year 1782, that Admiral Henry first became affected by that disorder, which he had, in so violent a degree, that he could only crawl about;—had pains all over his body; —and, at last, became quite a cripple. Though he found himself rather better of some applications made with tools of wood, which he had tried in 1787; yet the swellings in his knees, ancles, and insteps, continued till the year 1810; when he began to use a common hammer, made of iron, with a bit of cork on the head, and covered with leather. He persevered in beating with this tool the parts affected, for about three years, night and morning, using at the same time, small *bone* instruments, with knobs, for loosening the tendons. He has now completely succeeded in removing the swellings; and, by keeping up these practices, he finds, that the limbs are not only kept well, but that they are improving every day*.

Understanding that Dr. William Balfour, of Edinburgh, had adopted modes, in some respects similar, for curing the rheumatism, I communicated to him the little tract regarding Admiral Henry's practices, and was favoured, by the Doctor, with a long communication on the subject, and a copy of his work on the rheumatism†.

In that work, he gives an account of thirty-three cases, in which friction, percussion, and compression, or bandages, have been tried, and, in general, with great success.

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* There is a detailed account of Admiral Henry's practices, in a little Tract, published by Callow, Medical Bookseller, Crown Court, Princes-street, Soho, with engravings of the tools he uses.

† Intitled, "Observations, with Cases of Rheumatism," by William Balfour, M. D. 1 vol. 8vo. Printed an. 1816.

With respect to *percussion*, or beating, it was tried by Admiral Henry for the rheumatism, in 1810, before Dr. Balfour; but the Doctor had never heard of that circumstance, and was led to his experiments, from the result of his own reflexions, and a conviction of their probable utility.

As to *compression*, or bandages, I am informed by a respectable naval officer, that in the year 1809, at the hospital of Antigua, bandages were applied for rheumatic complaints, by the direction of Mr. John Mortimer, surgeon there, with good effect.

Dr. Balfour, however, has great merit, both for the ardour with which he prosecuted these modes of cure, and the satisfactory grounds on which he has explained the causes of their success; and his zeal ought not to go unrewarded.

Being much struck with the importance of the information thus communicated to me, I resolved to have some experiments of the efficacy of these practices tried under my own eye. A young man, a footman in the family, (Charles Killoway), in July and August last, (1817), had been troubled for about six weeks, with a violent rheumatism, which had confined him for some time to bed, and had disabled him from working. After he had got well enough to go about, he was still unable to do any work, owing to a swelling in his right hand; but by rubbing it constantly with Admiral Henry's bones*, in two or three days' time the swelling abated, and he has since had the complete use of his hand.

Understanding that two persons in this neighbourhood, were much afflicted with rheumatism, I requested Mr. William Davies, an intelligent and experienced surgeon, on the half-pay of the Navy, who had recently settled on Ham Common, to try the efficacy of these new practices on them, the trouble of which he very readily undertook. Much hopes of success could not be entertained in cases, where the malady had been of long duration, and had prevailed to a great extent, but it was desirable to ascertain, whether *any relief*, however moderate, could be obtained.

The following cases, drawn up by Mr. Davies, prove, that in circumstances almost desperate, some advantage may be derived by the afflicted, by the practices above explained.

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* The bones principally made use of by Admiral Henry, are, the ribs of cattle, boiled, to take out the grease, and then smoothed, and shaped by a file. Rib bones are naturally bent, which is a great advantage, as they can thus be more successfully applied to the different parts of the body.

Any knobs are preserved, and others, where necessary, are made with a file, so as to be applied across the tendons, as they are of great use in forwarding the process, more especially if the knobs are situated near the middle of the bone. Specimens of these bones, which may be used for the purposes of percussion, as well as rubbing, may be seen at Callow's, Crown Court. Bones being smoother, are better than tools made of wood, and are less apt to excoriate the skin..

CASE I.

Esther Crittenden, aged thirty-four years, of a scrofulous habit of body, married about ten years, has had two children, and miscarried once, by which accident she caught a severe cold, and was seized with a rheumatic affection *of the whole body*, commencing at the joints of the knee, depriving her, in six months, *of the use of all her limbs*, insomuch that she could neither move a hand or foot. The joints of the fingers particularly were so contracted, that they have become anchylosed, and she could not lift her hands to her head. About three years ago she was attacked with glandular swellings of the neck, which are very much swollen and enlarged, but they have never broken, and at this time, the neck continues in the same indolent and stationary state. It was on the 5th August last, (1817), that *percussion*, *friction*, and *bandages*, were used, agreeably to your suggestions. Flannel was found too heating, and calico bandages, for all the extremities, were substituted; and this process has been regularly followed up, rubbing every joint of the body morning and evening, for an hour and upwards, then applying the bandages with extreme care, that the pressure be exactly alike at the commencement to the termination of the bandage. The result of this plan, to the present period, is, that she has considerable more strength of her upper extremities, she can lift her hands to her head with facility, *an exertion she has been deprived of for years;* she can likewise support her body in an erect position much better, and from her daily exertion, with the hope of relief, she is in every way considerably improved. Having laboured under this very miserable and pitiable situation so many years, receiving, during that time, every medical assistance, in particular for two seasons of that time she was at the Margate Infirmary, where every hope of benefit was held out, and expected by all her friends; but nothing whatever afforded her any relief. It may be imagined from this, her joy and gratitude, at the benefit she has already obtained, and at the same time how frequently she expresses her regret, that the plan which promises so much utility to her sufferings, was never recommended to her before.

CASE II.

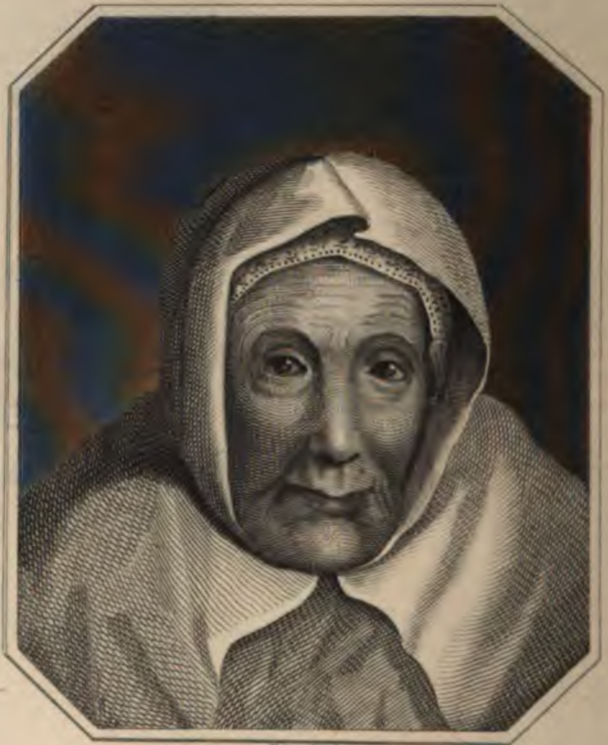
Hannah Morris, aged forty years, of a spare habit of body, married, but never had a child, slept in a damp house about ten years ago, and was immediately seized with rheumatic pains all over her body, and all her joints became swollen and enlarged, especially the elbows and wrists; she has been under the directions of a variety of respectable practitioners, and all the usual remedies applied to the joints, without any effect. The elbows and wrists are quite contracted, and much enlarged. In the beginning of August last, her knees became extremely painful, and swelled very much. In this state she continued, until the processes of percussion, friction, and bandaging were had recourse to, which was commenced on the 25th of the same month; and it is astonishing the beneficial effects she shortly experienced. By regularly attending to the rules laid down to her, in half a dozen rubbings, &c. she had as perfect use of her knees, as she had before she was laid up.

William Davis, Surgeon,
Ham Common, 12th Oct. 1817.

To the Right Hon Sir John Sinclair, Bart.
&c. &c. &c.

On the whole, it is evident, that even in cases of long standing, accompanied by other disorders, relief ought not to be despaired of; and it is a great advantage attending this mode of curing rheumatic disorders, that the means of relief, can be procured at a trifling expence, and that the application of those means will, in some cases, furnish an interesting occupation to the unfortunate patient.

Ormly Lodge, Ham Common,
12th October, 1817.



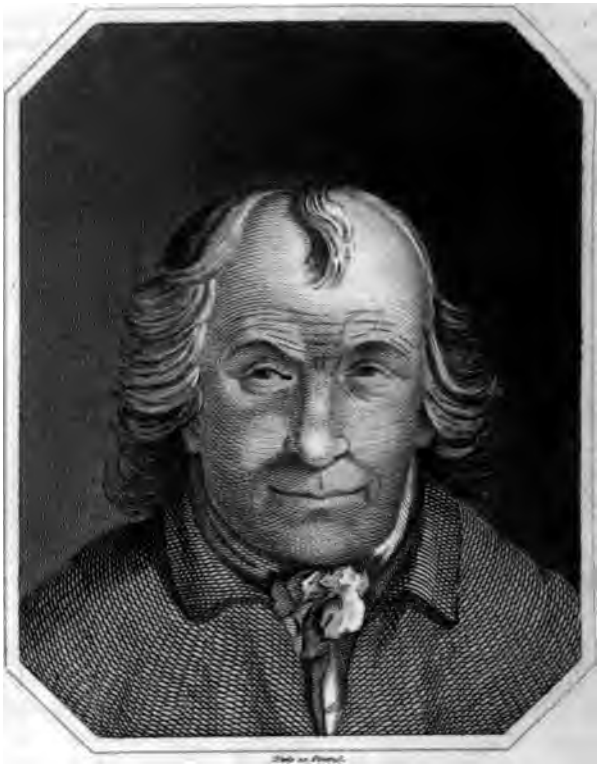
ISOBEL WALKER,

who lived in

The Parish of Daviot, Aberdeenshire,

and Died 2nd November 1774.

Aged 112 Years.



PETER GARDEN,
who lived in
The Parish of Auchterless, Aberdeenshire,
and Died 12th Jany 1775.
Aged 131 Years.

SOME ACCOUNT OF THE AGED PEOPLE,

OF WHOM ENGRAVINGS ARE ANNEXED.

1. *Isobel Walker, aged* 112 *Years.*

She was born in the parish of Daviot, in the county of Aberdeen, in Scotland. The period of her birth was established, by the records of the parish of Rayne, in the presbytery of Garioch, where she was born. Nothing particular is known regarding her mode of living, or the circumstances which occasioned her long life; excepting, that she is said to have possessed a placid temper, and to have been in that medium state, in regard to leanness and corpulency, which is favourable to longevity.

2. *Peter Garden, aged* 131 *Years.*

He was likewise a native of Aberdeenshire, in Scotland. He lived in the parish of Auchterless, in that county, and died on the 12th of January, 1775. But little is known of his history, excepting that he was taller than is usually the case with old men. He was employed in agricultural labours nearly until his death; and preserved his looks so well, that he appeared, it is said, to be a fresher and younger man than his son, when both were advanced in years.

There have been several older people in Scotland, than either Isobel Walker, or Peter Garden; but unfortunately no picture or engraving of them can now be found. Among the rest was John Taylor, a miner at the Lead Hills, who worked at that employment till he was 112 years of age. He did not marry till he was sixty, and had nine children afterwards. He saw to the last without spectacles; had excellent teeth, till within six years of his death, when he left off tobacco, to which he attributed their preservation: at length, in 1770, he yielded to fate, after having completed the one hundred and thirty-second year of his age*.

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* Pennant's Tour, vol. ii. p. 142.

During his stay in the island of Jura, Pennant, the traveller, collected information that confirmed the account given by Martin, of the great age attained by Gillour Mac Crain, which exceeded that of Parr or Jenkins. He died in the reign of Charles I., after keeping 180 Christmasses in his own house[*].

3. *The Countess of Desmond, aged* 140 *Years and upwards.*

She was daughter of the Fitzgeralds of Drumona[†], in the county of Waterford; and in the reign of Edward IV. married James, fourteenth Earl of Desmond. She was in England in that reign, and danced at Court with his brother Richard, then Duke of Gloucester. She was at that time a widow; for Sir Walter Raleigh says, that she held her jointure, from all the Earls of Desmond since that time[‡]. She lived to the age of some years above 140; and died in the reign of King James I. It appears that she retained her full vigour in a very advanced period of life; for the ruin of the House of Desmond reduced her to poverty, and obliged her to take a journey from Bristol to London, to solicit relief from the Court, at a time when she was above 140[§]. She also twice or thrice renewed her teeth; for Lord Bacon mentions, in his History of Life and Death, *ter per vices dentiisse*[‖]; and in his Natural History he states, that she did *dentire* twice or thrice, casting her old teeth, and others coming in their place.

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[*] Pennant's Tour, vol. ii. p. 245. Buchanan, in his Hist. lib. i. mentions one Laurence, who lived in his time in the Shetland Islands, who married at 100 years, and died at 140, rather of old age, than of any distemper. Kentigern, also known under the name of St. Mungo, who founded the Bishopric of Glasgow, was, it is said, still older, namely, 185 years. On his extraordinary age, and place of interment, the following verses were made:

> "Cum octogenos centum quoque quinque vir annos
> "Complerat. Sanctus est Glasgow funere functus."
> *Spottiswood's Hist. of the Church of Scotland*, p. 11 and 112.

[†] Smith's History of Cork, vol. ii. p. 36.

[‡] Raleigh's Hist. of the World, book i. chap v. sect. 5.

[§] Sir William Temple's Essay on Health and Long Life, fol. edit. of his Works, p. 276. Code of Health, 2d edit. vol. iv. p. 337.

[‖] Bacon on Life and Death. Code of Health, 2d edit. vol. iv. p. 182. See Pennant's Tour in Scotland, 3d edit. vol. i. p. 85.

CATHERINE Counteſs of **DESMOND.**

140 Years and upwards

THOMAS PARR,

Born in Shropshire Aº 1483.

Dyed Nov.r 15th 1635 Aged 152 Years

Buried in Weſtminſter Abbey.

HENRY JENKINS,
of Ellerton in Yorkshire,
who lived to the surprizing Age of 169,
which is 16 Years longer than Old Parr.

4. *Thomas Parr, aged* 152 *Years.*

Thomas Parr, the son of John Parr of Winnington, in the parish of Alherbury in Shropshire, was born in 1483, in the reign of Edward IV., and resided in the Strand, London, anno 1635, consequently at the age of 152 years and some odd months. He lived in the reigns of ten kings and queens, and was buried in Westminster Abbey. He is said to have been a man of a very different stamina from the rest of mankind, for a person who had seen him, describes him thus:

> " From head to heel his body had all over
> " A quick-set, thick-set, nat'ral hairy cover."

When he was about 152 years of age, he was brought up to London by Thomas Earl of Arundel, and carried to Court[*]. The King said to him, "You have lived longer than other men: what have you done more than other men?" He replied, "I did penance when I was an hundred years old." His great rules for longevity are well known—"Keep your head cool by temperance; your feet warm by exercise; rise early, and go soon to bed; and if you are inclined to get fat, keep your eyes open, and your mouth shut." Or in other words, "Be moderate both in your sleep and diet."—When his body was dissected, all his inward parts appeared so healthy, that if he had not changed his diet and air, he might perhaps have lived a good while longer[†].

5. *Henry Jenkins, aged* 169 *Years.*

The birth-place of Henry Jenkins is unknown, but there is satisfactory evidence of his great longevity. At the age of between ten and twelve, he was sent to North Allerton with a horse-load of arrows, previous to the battle of Flowden, which was fought on the 9th of September, 1513; and as he died on the 8th day of December, 1670, he must have been then about 169 years. He had been often sworn in Chancery, and in other Courts, to above 140 years' memory; and there is a record preserved in the King's Remembrancer's Office in the Exchequer, by which it appears, "That Henry Jenkins, of Ellerton upon "Swale, labourer, aged 157, was produced, and deposed "as a witness." This deposition was taken in April, 1665, at Kettering in Yorkshire*.—There were also four or five persons in the parish where he lived, all of them reputed to be about 100 years old, who said, that he was an elderly man ever since they knew him.

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[*] Temple's Essay on Health. Code of Health, 2d edit. vol. iv. p. 337.

[†] There is a particular account of Old Parr in the Harleian Miscellany, vol. vii. p. 66; and in the Phil. Trans. vol. iii. p. 866. There is an anatomical account of the person and dissection of Thomas Parr, by the celebrated Dr. Harvey, an abstract of which is printed in the 3d edition of the Code of Health, Appendix, p. 21.

Little is known of his mode of living, excepting that, towards the last century of his life, he was a fisherman, and not only used to wade the streams, but actually swam rivers, after he was past the age of 100 years. When he could no longer follow the occupation of a fisherman, he went begging about Bolton, and other places in Yorkshire. His diet is said to have been coarse and sour†. In the account given of him in the Philosophical Transactions, (vol. xix. p. 266), it is lamented, that no information had been procured of his temperament of body, his manner of living, and all other circumstances which might furnish any useful instructions to those who are anxious to ascertain the means of attaining longevity.

6, *and* 7. SARAH ROVIN, *aged* 164, *and* JOHN ROVIN, *aged* 172 *Years.*

The following is a translation of the inscription on the picture drawn of Sarah and John Rovin, an engraving of which is annexed.

"John Rovin, in the 172d year of his age, and Sarah "his wife, in the 164th year of her age. (Grais Ritus.) "They have been married 147 years, and both born and "died at Stadova, in the directory of Casanseber, in Temeswaer Banets; their children, two sons and two "daughters, all yet alive. The youngest son is 116 years "of age; and he has two great grandsons, the one in the "35th, and the other in the 27th year of his age."

Dated August 25, 1725.

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* Philosophical Transactions, vol. xix. p. 543.

† In the Phil. Trans. vol. xiv. p. 597, there is an account of a number of old people in the north of England. It is said, "their food in all this mountainous country, is exceeding coarse, as salted beef and sour-leavened oatbread."

Engraved for the Code of Health & Longevity.

Neele sc. 352 Strand.

John Rovin in the 172d. & Sarah his Wife

In the 164th Year of their respective Ages.

From a picture now belonging to The Right Honble
Sir John Sinclair. Bart. Author of the Code
of Health & Longevity.

A description of the picture from which the annexed engraving is taken, has been given in the following terms:

"The dress of the man, in the latter of those pictures, "consists of a white frock, open at the bosom, and reaching almost down to his knees, and is confined round "his waist by a girdle made of rushes, in which is hung "a knife. He has trowsers the same colour as his frock, "the bottom of which are fastened round his ancles by "the straps of his sandals: he is standing, supported by "a stick in his right hand, and his knees rather bent: "in his left hand is a bundle of Indian corn, which he "is presenting to his wife. What hair he has, and his "beard, is a light grey; his eyes are quick, clear, and "penetrating: in his whole deportment there is rather "the appearance of a general decline of nature, but by "no means those traces of old age which so strongly "mark his wife. He is near an old ruin, and in the "back-ground is a small fire kindled with dried sticks. "His wife is sitting on a fragment of the ruin; on her "head is a kind of coloured cap; and her gown or "mantle, which reaches down to her feet, is coloured "likewise. She stoops very much; her right elbow rests "on her knee, and her hand is rather extended, to receive "the corn from her husband, on which, however, she is "by no means intent, as the attention of them both appear to be occupied by some other object: her left hand "crosses her right arm near the elbow, both of which "are uncovered, as are also her feet, which, with her "face, are very much wrinkled; and her neck, and bosom particularly, discover the ruinous effects of time: "in short, in her whole figure, there is the appearance "of the extremity of old age. Near her feet, is a very "handsome tortoise-shell cat sitting on the ground, who "also appears very old. She is on the left, and her husband on the right-hand side of the picture."

8. *Petratsch Zortan, or Czartan, aged* 185.

In a Dutch Dictionary, entitled "*Het algemeen Historich Woonderbok*," &c. there is an account given of this ancient personage, of which the following is a translation:

"Czartan, (Petratsch), was born in 1537, at Kofrock, "a village four miles from Temeswaer, in Hungary,

“ where he had lived 180 years. When the Turks took
“ Temeswaer from the Christians, he kept his father's
“ cattle. A few days before his death, he walked, with
“ the assistance of a stick, to the post-house of Kofrock,
“ to ask charity of the travellers. He had but little sight,
“ and his hair and beard were of a greenish white colour,
“ like mouldy bread; and few of his teeth remained.
“ His son, 97 years of age, was born of his father's third
“ wife. Being a Greek by religion, the old man was a
“ strict observer of fasts, and never used any food but
“ milk and cakes, called by the Hungarians *kollatschen*,
“ together with a good glass of brandy. He had descendants
“ in the fifth generation, with whom he sometimes
“ sported, carrying them in his arms. He died in
“ 1724. Count Wallis had a portrait taken of this old
“ man, when he fell in with him previous to his death.
“ The Dutch Envoy then at Vienna, transmitted this
“ account to the States-General.”

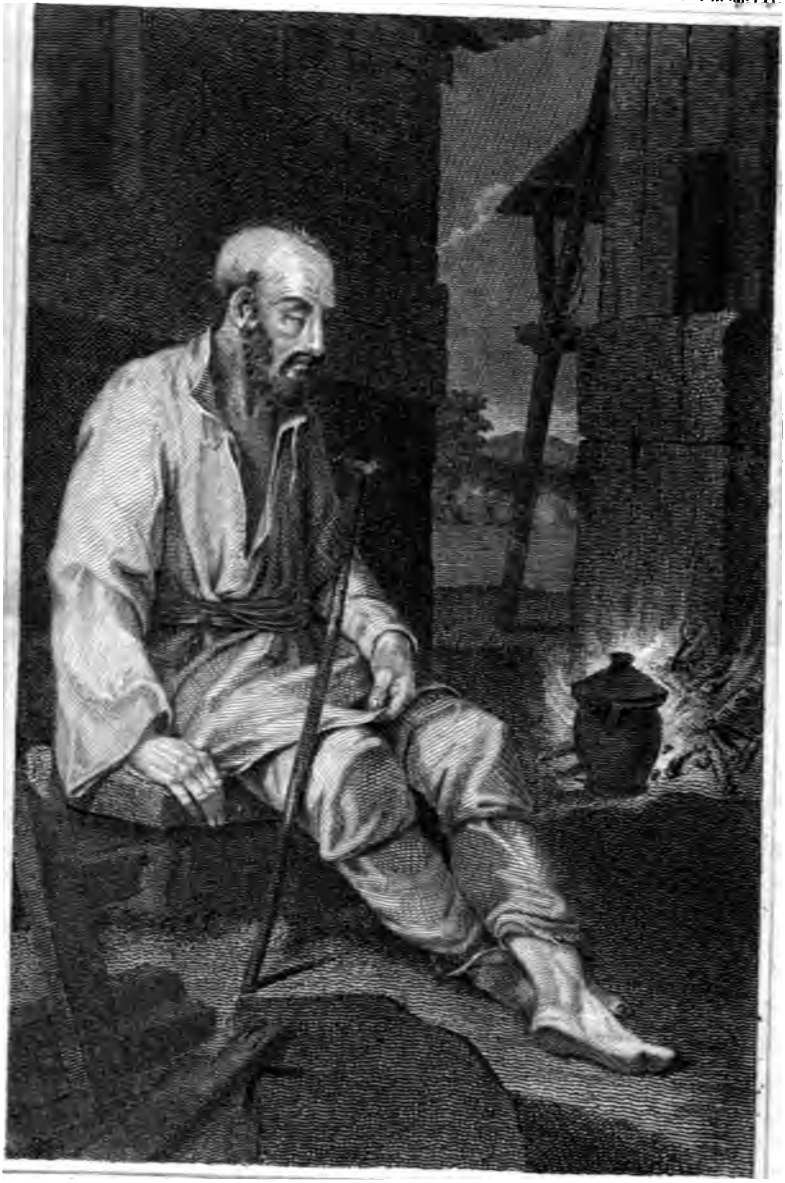
Translation of the Inscription on the Picture of Peter Zortan, or Czartan, an Engraving of which is annexed.

“ Petratsch Zortan, a peasant at a village called Keveretch,
“ in the Banet of Temeswaer, in the 185th year
“ of his age: he died the 5th day of January, 1723-4.
“ His youngest son is alive, in the 97th of his age.”

The following description will give the reader some idea of the picture of Peter Zortan:

“ He is dressed in a white frock, reaching down to his
“ knees, and a pair of white trowsers tucked up at the
“ ancles: round his waist is a girdle made of rushes; he
“ has two front teeth remaining in his under jaw: he is
“ sitting on part of a ruin, in a very dark shade; he rests
“ his right hand on his seat, and with his left holds the
“ end of his frock, as if something was contained in his
“ lap: his stick leans against his right knee: his left foot
“ (the sole of which is rather turned up) crosses his right;
“ and this part particularly, with his fingers, and the
“ folding of his frock at the bosom, is executed with
“ exquisite taste and judgment; his hair, of which he
“ has very little, with his beard, is grey. He is boiling
“ a pot resembling an urn, by a small fire near his feet;
“ but he appears as if necessity obliged, rather than if

Engraved for the Code of Health & Longevity.



— Petratsch Zortan, in the 185th year of his Age.

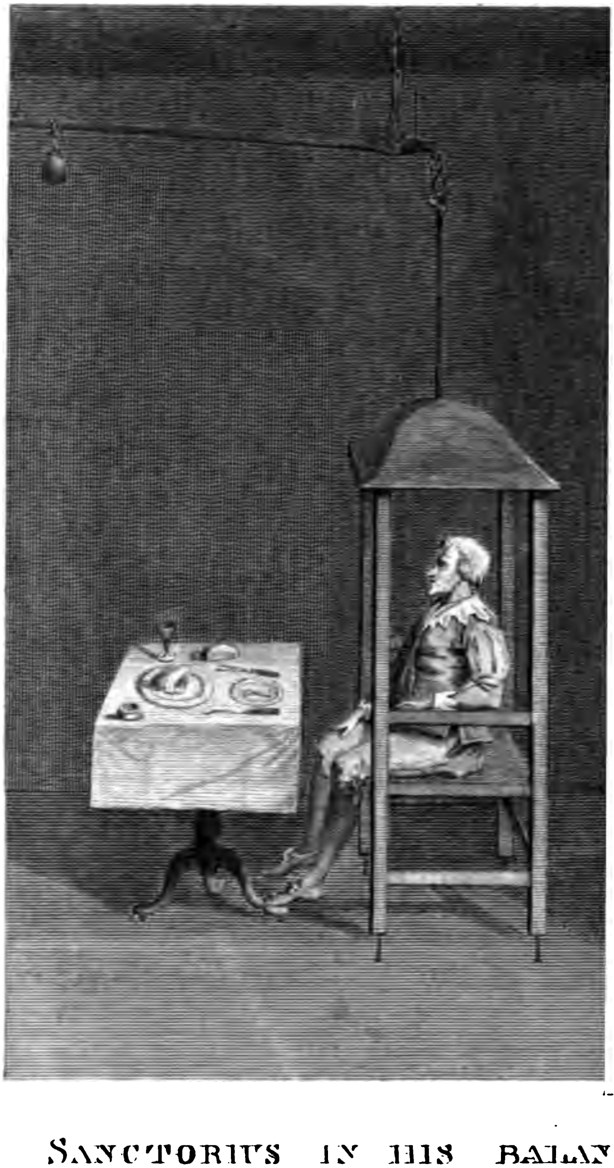
— He died on the 5th Jan^y 1724. —

— From a picture now belonging to the Right Hon^ble Sir John Sinclair Bart. Author of the Code of Health & Longevity.

" inclination prompted him to do it, as his countenance
" is strongly expressive of languor and fatigue, and his
" eyes are cast on the pot with an air of great indiffe-
" rence. He is sitting on the left side of the picture."

◆

It is supposed that these eight persons are the oldest of whom any picture is now extant. It was therefore considered proper, that Engravings of them should be executed, to accompany the *Code of Health and Longevity.*



SANCTORIUS IN HIS BALANC

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